



ecology and environment, inc.

International Specialists in the Environment

720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

July 31, 2007

Mr. Earl Liverman, On-Scene Coordinator
United States Environmental Protection Agency, Region 10
1910 Northwest Boulevard, Suite 208
Coeur d'Alene, Idaho 83814

RE: Contract Number EP-S7-06-02, Technical Direction Document (TDD) Number 07-03-0004;
Removal Assessment Report, Avery Landing Site, Avery, Idaho

Dear Mr. Liverman:

Enclosed please find the final Removal Assessment Report for the Avery Landing Site in Avery, Idaho. If you have any further questions or comments, please contact me at (206) 624-9537.

Sincerely,

Jeffrey Fowlow
START-3 Project Leader

Enclosures

cc: Clifford Villa, Assistant Regional Counsel, USEPA Region 10, Seattle, WA
Steven Hall, START-3 Project Manager, E & E, Seattle, WA

REMOVAL ASSESSMENT REPORT

Avery Landing Site

Avery, Idaho

TDD: 07-03-0004



Prepared for

U.S. Environmental Protection Agency, Region 10
1910 Northwest Boulevard, Suite 208
Coeur d'Alene, Idaho 83814

Prepared by

Ecology and Environment, Inc.
720 Third Avenue, Suite 1700
Seattle, Washington 98104

July 31, 2007

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REMOVAL ASSESSMENT DECISION - EPA REGION 10

Site Name: Avery Landing Site EPA ID #: 10ZZ

Contractor/TDD Number: Ecology and Environment, Inc. / TDD 07-03-0004

Address: One mile west of Avery on State Highway 50

City: Avery County or Borough: Shoshone County State: Idaho

Report Type: Removal Assessment Report Date: July 31, 2007

OSC DECISION:

Further Removal Assessment/Action is/is not (circle one) required because:

- ☐ 1. Removal assessment conducted, no further action required.
- ☐ 2. Referred to other EPA division: _____.
- ☐ 3. Referred to other agency: _____.
- ☐ 4. Clean up already in progress.
- ☐ 5. Wasn't able to locate or verify complaint.
- ☐ 6. Clean up appropriate but delayed due to resources or priority.
- ☐ 7. Other - discuss below.

DISCUSSION/RATIONALE:

Signature: _____
EPA On-Scene Coordinator

Date: _____

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**REMOVAL ASSESSMENT REPORT
AVERY LANDING SITE
AVERY, IDAHO**

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**REMOVAL ASSESSMENT REPORT
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AVERY, IDAHO**

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LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
ARARs	applicable or relevant and appropriate requirements
AST	above-ground storage tank
AWQC	Ambient Water Quality Criteria
bgs	below ground surface
°C	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMC	CMC Real Estate Company
CMSPR	Chicago, Milwaukee, St. Paul, and Pacific Railroad
DEQ	Idaho Department of Environmental Quality (formerly Division of Environmental Quality)
DQO	data quality objectives
DRO	diesel-range organics
E & E	Ecology and Environment, Inc.
EPA	United States Environmental Protection Agency
Farallon	Farallon Consulting, L.L.C.
GPS	Global Positioning System
Hart Crowser	Hart Crowser, Inc.
HHMSSL	Human Health Medium-Specific Screening Level
HSA	hollow-stem auger
IDAPA	Idaho Administrative Procedures Act
J	estimated value
L/min	liter per minute
Laucks	Laucks Testing Laboratories, Inc.
MCL	Maximum Contaminant List
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
n.d.	not dated
NWTPH-Dx	Northwest Total Petroleum Hydrocarbons, Diesel Range Extended
ORO	oil-range organics
OSC	On-Scene Coordinator
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
Potlatch	Potlatch Corporation
PVC	polyvinyl chloride
QA/QC	quality assurance / quality control
R	rejected value
REM	Risk Evaluation Manual
RP	responsible party
RPD	relative percent difference
SQG	sediment quality guidelines
SSSP	site-specific sampling plan
START	Superfund Technical Assessment and Response Team
STL	STL-Seattle, Inc.
SVOCs	semivolatile organic compounds

TAL	target analyte list
TAT	Technical Assistance Team
TBC	criteria to be considered
TDD	Technical Direction Document
TEC	threshold effect concentration
U	not detected
UJ	estimated value (detection limit)
URS	URS Consultants, Inc.
URS Greiner	URS Greiner, Inc.
VOCs	volatile organic compounds

1.0 INTRODUCTION

The United States Environmental Protection Agency (EPA) has performed a removal assessment at the Avery Landing Site in Avery, Idaho. The site is located directly adjacent to the St. Joe River, and the site was the former location of a railroad roundhouse, maintenance, and refueling facility for the Chicago, Milwaukee, St. Paul, and Pacific Railroad (CMSPR). Through the years, petroleum hydrocarbon and other industrial products were likely spilled on site, which led to floating petroleum hydrocarbon on the groundwater table, petroleum seeps to the St. Joe River, and other contaminants found on site. Since the late 1980s, Potlatch Corporation (Potlatch), who purchased part of the property, has been investigating part of the site and performing site cleanup activities to address the petroleum hydrocarbon contamination on the groundwater table and seeping to the river. EPA is currently investigating the site to address the potential presence of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances in soil, groundwater, and surface water from the historic uses of the site as a railroad roundhouse and maintenance facility.

Ecology and Environment Inc. (E & E) has been tasked by EPA under Superfund Technical Assessment and Response Team (START)-3 contract number EP-S7-06-02, Technical Direction Document (TDD) 07-03-0004, to perform a removal assessment of the site through a review of its historic uses and the collection of soil, groundwater, and surface water samples for analytical testing. As a part of the field sampling event, START-3 installed six monitoring wells and advanced an additional seven soil borings to investigate subsurface soil and groundwater conditions.

This report is organized into the following sections: Introduction (Section 1), Site Conditions and Background (Section 2), Field Sampling Event (Section 3), Sample Collection and Analysis (Section 4), Quality Assurance / Quality Control (Section 5), Conclusions (Section 6), and References (Section 7). Selected photographs of site activities are included in Appendix A.

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2.0 SITE CONDITIONS AND BACKGROUND

2.1 SITE CONDITIONS

2.1.1 Site Location

The site is located in the St. Joe River valley in the Bitterroot Mountains in northern Idaho, one mile west of the town of Avery, Idaho, in Shoshone County (Figures 2-1 and 2-2). The site is located directly adjacent to the St. Joe River to the south and Highway 50 to the north, at 47° 13' 57" north latitude and 115° 43' 40" West longitude. The elevation of the site is approximately 2,540 feet above mean sea level (URS 1993).

The St. Joe River is a special resource water that is used for wildlife habitat, recreation, and as drinking water for downstream residents. According to IDAPA 58.01.02.110.11, the segment of the St. Joe River adjacent to the Avery Landing site that could be impacted by contaminants found at the site has the following designations: special resource water, domestic water supply, primary contact recreation, cold water communities, and salmonid spawning. The site is located in a narrow and remote river valley, and the immediate area around the site is residential and commercial.

2.1.2 Site Layout

The site is located in a flat, filled bank at a bend in the St. Joe River (Figure 2-3). There is little remaining at the site to indicate its previous use as a railroad roundhouse and maintenance facility, with the exception of a concrete slab and the remnants of rail lines leading to the former roundhouse. Presently, the site is relatively flat ground with gravel and a small amount of vegetative growth. The site was largely composed of fill material as a result of construction of the railroad facility, and Potlatch performed additional leveling and grading of the site after purchasing the property (URS 1993).

There are numerous monitoring wells and piezometers (hollow polyvinyl chloride [PVC] pipes installed vertically in subsurface soil and used to monitor groundwater elevations) located on site. There are several larger wells that were used for the product recovery system that was operated in the past. In the center of the site there is an above-ground storage tank (AST) and a shed on the concrete slab.

The site is approximately divided in half by two properties (Figure 2-3). The eastern portion of the site is owned by Larry Bencik, who maintains a vacation cottage on the property. The western portion of the site is owned by Potlatch. On the Potlatch property, there are several houses, motor homes, and motor home utility hook-ups. Several residents live on the property year-round, and several more reside on the property seasonally. There is a domestic well on the property for use of the residents.

2.1.3 Geology and Hydrogeology

The site is located in northern Idaho, which is dominated by Precambrian metasedimentary, metamorphic, igneous intrusive, and volcanic formations. Younger sedimentary formations range from glacial deposits of outwash, till, glaciofluvial and glaciolacustrine deposits (TAT n.d.).

Locally, fill material is present to approximately 18 feet below ground surface (bgs; URS 1993). Groundwater elevations typically range from approximately 10 to 16 feet bgs (Hart Crowser 2000a). Groundwater elevations appear to be associated with elevations of the St. Joe River (TAT n.d.). The river flows to the west at the site, and groundwater flow direction is generally to the south and west (see Section 3.2 and Figure 3-3). As discussed in Section 3, START-3 primarily observed sand with silt and gravel in the subsurface soils. The presence of silt and the slow recharge rates observed during monitoring well development (Section 3.1.3) suggests that groundwater on site may flow at relatively slow rates (i.e., at rates slower than would be observed in pure sand).

2.2 SITE HISTORY AND OWNERSHIP

The site was used as a switching and maintenance facility for the CMSPR from 1909 until 1977. The facility included a turntable, roundhouse, machine shop, fan house, engine house, boiler house, storehouses, coal dock, oil tanks, and a pump house. Activities performed by the railroad at the facility included train refueling, the use of solvents to clean engine parts, cleaning of locomotives by hosing them down, and equipment maintenance. The facility was located at the end of an electric rail line from the east, and at the Avery facility trains switched to fuel oil and/or diesel locomotives. The facility reportedly included on-site storage of transformer oil, although the use of transformer oil containing polychlorinated biphenyls (PCBs) has not been documented. As a refueling station, fuel oil was stored on site, including the use of a 500,000-gallon above ground fuel oil tank. (URS 1993).

CMSPR filed bankruptcy (presumably in the late 1970s) and then reorganized under the name CMC Real Estate Company (CMC). Under CMC, the properties were sold and otherwise divested. The western portion of the property (Figure 2-3) was sold to Potlatch in 1980 (TAT n.d.). The eastern portion of the property reverted back to the family of the previous owner, before CMSPR began operations, and this family sold the property to David Thierault. In 1996, Mr. Thierault sold the property to Mr. Larry Bencik, who currently owns the property (Bencik 2007). Another portion of the property was acquired by the Federal Highway Administration for use in the construction/expansion of State Highway 50. The site has been used by Potlatch since 1980 for parking, staging, and temporary log storage (URS 1993).

2.3 SUMMARY OF PREVIOUS INVESTIGATIONS AND CLEANUPS

2.3.1 Free Product Recovery

In the late 1980s, the State of Idaho Division of Environmental Quality (now Department of Environmental Quality [DEQ]) began to investigate the site because of the presence of visible petroleum product seeps to the St. Joe River from the riverbank on the site. The investigation included the installation of several monitoring wells and test pits installed in the late 1980s and early 1990s. As a result of these investigations, it was determined that free product was a mixture of diesel and heavy oil and was present on the groundwater table throughout the site, with product thicknesses exceeding four feet in some locations.

In 1994, Potlatch installed a product recovery system at the site, pursuant to an DEQ Consent Decree. The system included several trenches installed along the bank of the river. Groundwater and product were pumped from these trenches and then sent through an oil/water separator. Recovered product was stored in an on-site AST for later off-site disposal. Recovered groundwater was pumped across Highway 50 and re-injected into the ground through a re-infiltration trench installed north of the road. The system operated until approximately 2000 and recovered a total of 1290 gallons of product. (Farallon 2006)

By 2000, despite the operation of the product recovery system, product seeps were still observed on the banks of the St. Joe River from the site. To address this ongoing issue, Potlatch, under direction from DEQ, installed a restraining barrier along the bench to act as a further barrier to prevent free product from reaching the river. In 2000, Potlatch excavated material away from the bank, installed a PVC liner to act as a barrier wall to product, and backfilled with sand, gravel, and riprap along the bank. Potlatch also installed a series of product recovery trenches and wells to recover any free product that may collect against the barrier (Farallon 2006). With the new restraining barrier, Potlatch proposed to recover additional free product if product was present in site recovery wells at a thickness of 0.05 feet (0.6 inches) or greater. Potlatch continued to monitor the monitoring wells on site for free product, although they never operated the recovery system again (Cundy 2007). Figure 2-4 illustrates the estimated extent of the free product plume in 2000 (Hart Crowser 2000b) and the highest product thickness levels observed for each well.

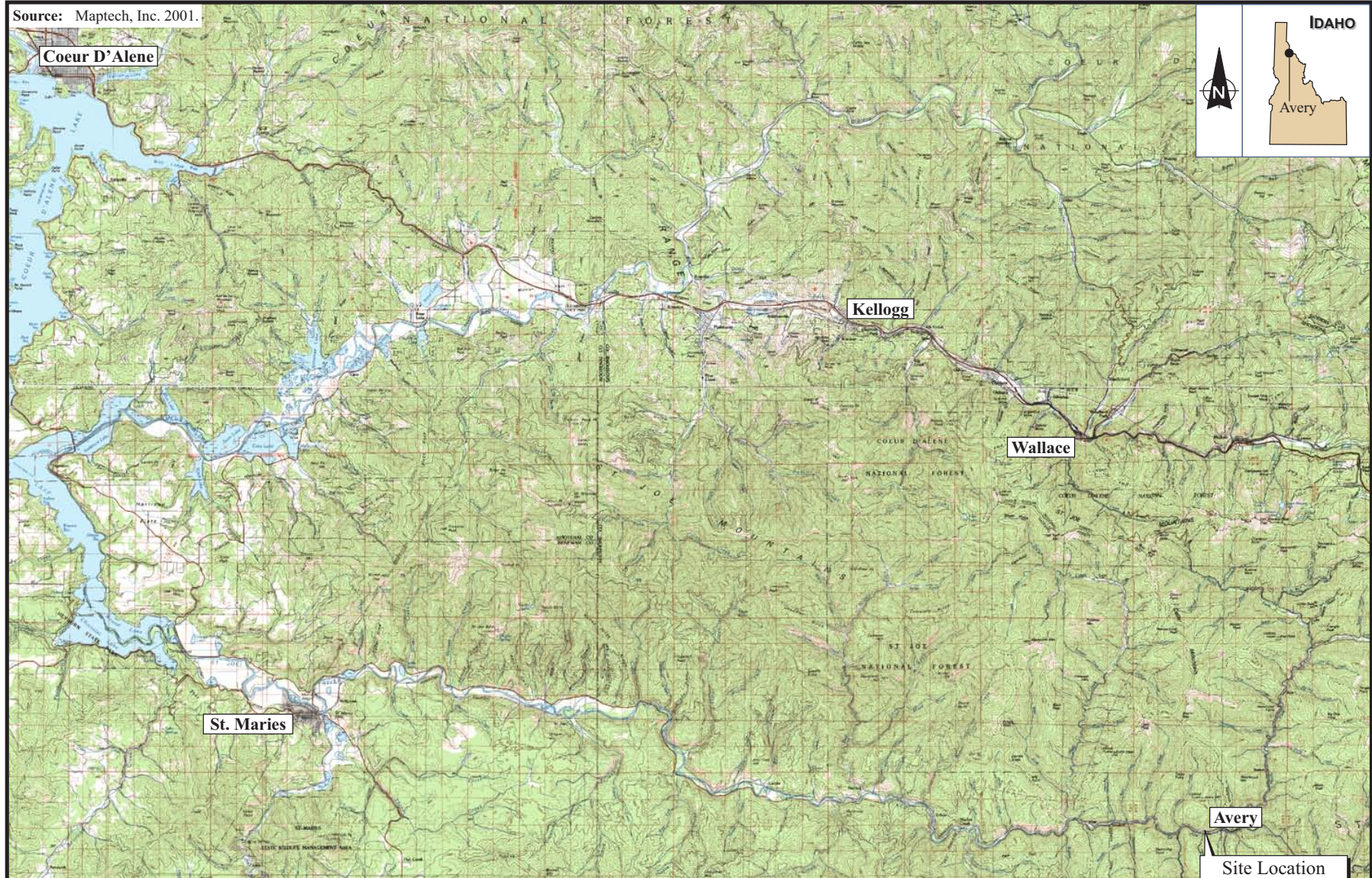
DEQ continued to provide oversight for the site, and in 2005 and 2006, DEQ continued to observe product seeps in the bank of the St. Joe River.

2.3.2 EPA Site Inspection

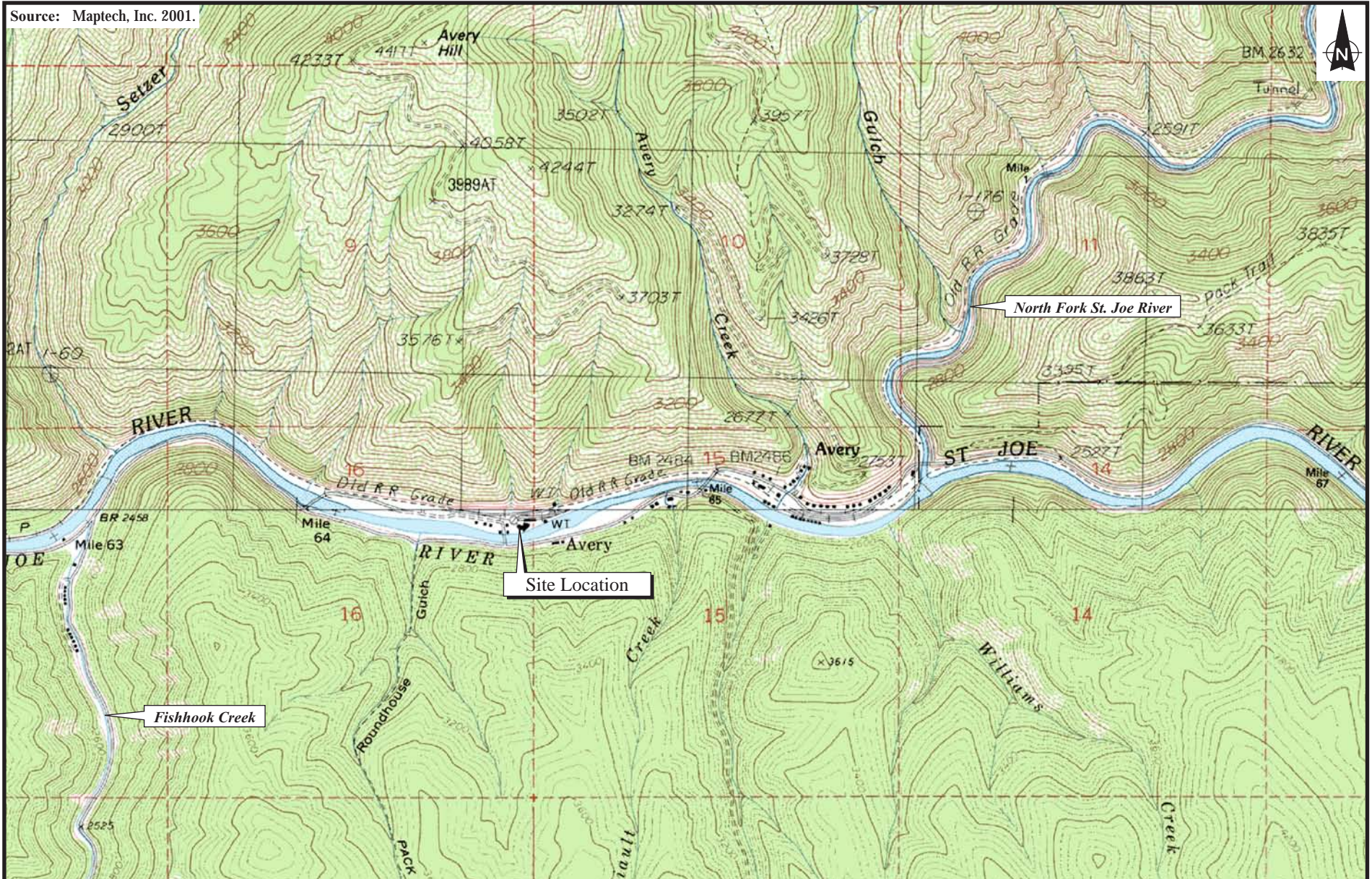
In 1992, URS Consultants, Inc. (URS), as a contractor to EPA, performed a site investigation at the site. URS collected soil, groundwater, and surface water samples from the site and vicinity for


laboratory analysis. The results indicated the presence of contaminants, including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, and PCBs at the site. Benzene, arsenic, and lead were detected in an on-site monitoring well (HC-3¹) at concentrations that exceeded the federal Maximum Contaminant Levels (MCLs; URS 1993).

¹ Monitoring well HC-3 is no longer present on site. It was presumably closed during the installation of the product recover system.



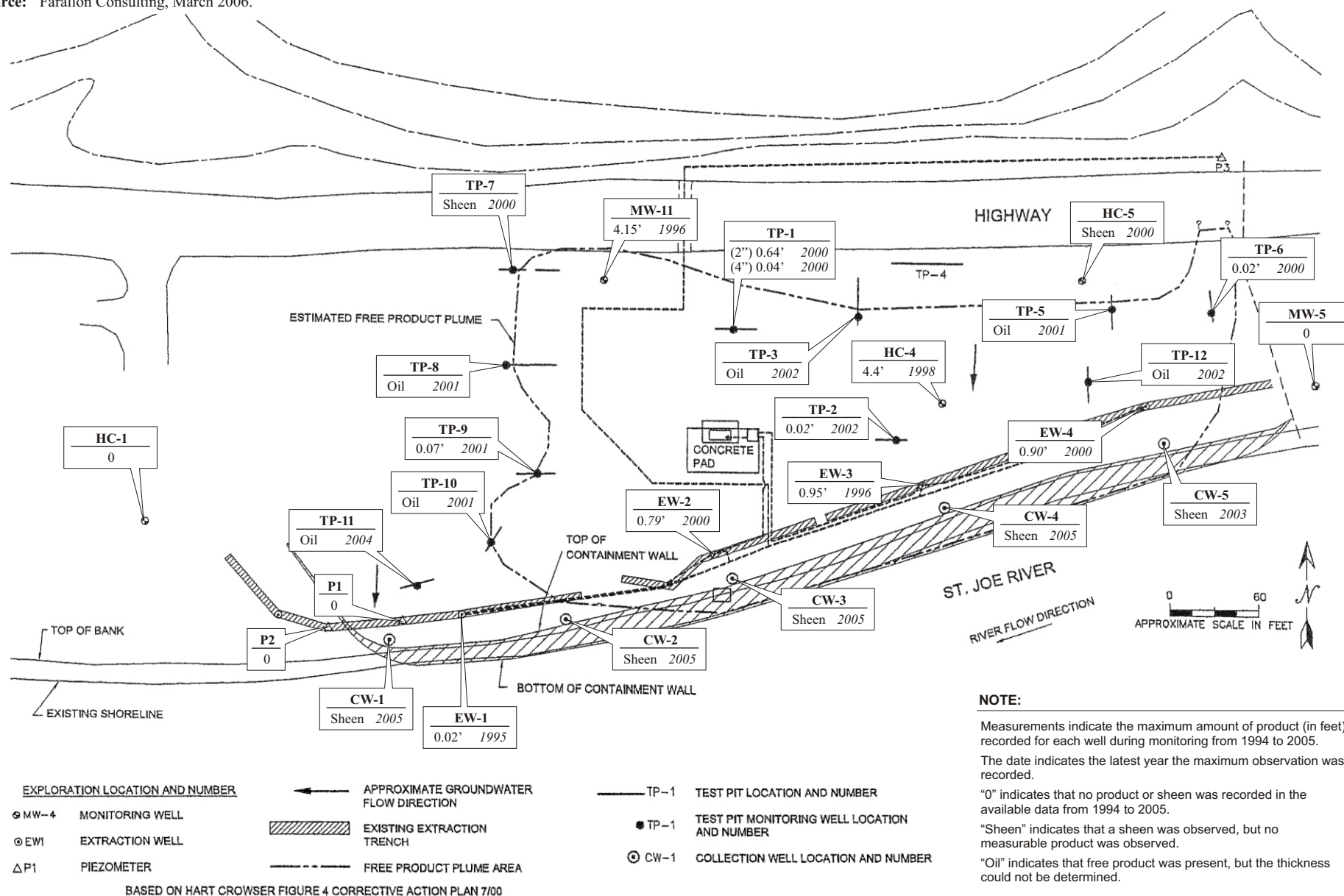
Source: Maptech, Inc. 2001.



 <p>ecology and environment, inc. International Specialists in the Environment Seattle, Washington</p>	<p>AVERY LANDING SITE Avery, Idaho</p>		<p>Figure 2-2 SITE VICINITY MAP</p>	
	<p>0 1000 2000 Approximate Scale in Feet</p>		<p>Date: 6/25/07</p>	<p>Drawn by: AES 10:START-3\07030004\fig 2-2</p>



Source: Farallon Consulting, March 2006.



BASED ON HART CROWSER FIGURE 4 CORRECTIVE ACTION PLAN 7/00



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Seattle, Washington

AVERY LANDING SITE
Avery, Idaho

Figure 2-4
ESTIMATED FREE PRODUCT PLUME IN 2000 AND
HISTORIC MAXIMUM PRODUCT THICKNESSES

Date:
7/25/07

Drawn by:
AES

10:START-3\06090001\fig 2-4

3.0 FIELD SAMPLING EVENT

From April 16 through 21, 2007, START-3 performed the field work associated with the removal assessment, including the installation of monitoring wells and additional soil borings and the collection of soil, groundwater, and surface water samples. START-3 also planned to collect sediment samples from the bank of the St. Joe River, although sediment samples could not be collected because of the presence of riprap on the bank (see Section 4.4). Specific details about sampling activities are provided in this section.

3.1 SOIL BORING AND MONITORING WELL INSTALLATION

3.1.1 Drilling Methods

START-3, through a drilling subcontractor, installed a total of 13 soil borings to collect subsurface soil samples from the site. Additionally, six of the borings were completed into monitoring wells. The drilling subcontractor was Environmental West Exploration, Inc., of Spokane, Washington, a State of Idaho-certified driller.

Drilling was performed with a 6-inch hollow-stem auger (HSA). In general, the borings were advanced until at least groundwater was encountered. For each boring, soil samples were generally collected at discrete 2-foot intervals with a 2-inch diameter split spoon sampler. Discrete interval samples were generally collected beginning at 1 foot bgs and continued with periodic samples until groundwater was encountered. For some borings, split-spoon samples were collected at less frequent intervals below groundwater. The soil was characterized by a START-3 geologist, who recorded the data on drilling logs. In general, most of the subsurface soil was characterized as sand with silt and gravel.

The borings are described in Table 3-1, and the drilling logs are included in Appendix B. The six soil borings that were converted to monitoring wells were labeled EMW-01 through EMW-06. The seven additional soil borings that were not converted to monitoring wells were labeled ESB-01 through ESB-07. START-3 recorded the lateral position of each boring and monitoring well with Global Positioning System (GPS), and the locations are illustrated in Figure 3-1. EMW-01 was intended to be a background soil boring / monitoring well, as is it is located upriver and therefore upgradient from the site. To the extent possible, soil borings and monitoring wells were placed in locations to evaluate the potential environmental impact from the site's past use as a railroad maintenance and refueling station. For example, after referring to a historical site diagram of the railroad facility, soil boring ESB-02 was placed near the former location of the machine shop, and EMW-02 and ESB-04 were placed near the locations of fuel lines.

The monitoring wells were constructed out of 2-inch PVC pipe with a 0.020-foot (20 slot) V-wire screen. Each well was constructed with a 10-foot section of screen, and the screen was placed at an approximate depth designed to represent the historic maximum and minimum groundwater elevations at those locations. Each screened section was surrounded by 10/20 filter sand, and then sealed at the top with bentonite and concrete. Each monitoring well was completed as a flush-mounted steel monument set in concrete.

While collecting the discrete intervals for geological logging, START-3 also collected soil samples for analytical testing. More details about sample collection and analytical testing are provided in Section 4.

3.1.2 Free Product Observations

While advancing the soil borings, START-3 also recorded observations about any free product that was encountered in the subsurface soil or groundwater. Details are included in the drilling logs, and a summary of the observations is presented in Table 3-2. START-3 observed evidence of free product in subsurface soil and/or groundwater from 10 of the 13 soil borings advanced at the site. The presence of free product was determined by the observation of any of the following characteristics:

- A noticeable petroleum hydrocarbon odor;
- Oily or oil-stained soils;
- Free product mixed with soil;
- A visible sheen in groundwater; and/or
- Drops of oil in groundwater.

The locations where free product was detected are illustrated in Figure 3-2. Free product was not detected in the upgradient monitoring well EMW-01, which was considered the background soil boring / monitoring well. Additionally, free product was not detected in EMW-03, which was the northwestern-most soil boring, or ESB-02, where drilling refusal occurred between 2 and 3 feet bgs. Figure 3-2 includes the estimated areas of the free product plume in 2000 (Hart Crowser 2000b), and the current area of free product, based on START-3's observations of free product on groundwater and in soil borings. As can be seen from Figure 3-2, the area of the free product plume has grown larger, and it has extended downgradient to the west and southwest.

3.1.3 Monitoring Well Development

After the monitoring wells were installed, they were developed to remove solids remaining in the well and sand pack and to improve access to representative aquifer water. Well development was

performed by the drillers under the supervision of the START-3 geologist. The wells were developed with a pump inserted into the well that pumped out the water until water clarity improved. While pumping the water, the well inlet was moved up and down in the well column so that the entire screened interval was developed. With the exception of EMW-01, the background well, development water was pumped into drums for storage.

Some of the monitoring wells ran dry during development, and the groundwater was slow to recharge. For these wells, START-3 and the driller allowed water to recharge before continuing the development. The fact that water was generally slow to recharge during well development indicates that subsurface soil supports relatively slow groundwater flow rates.

3.2 MONITORING WELL SURVEY

Following the installation of the six new monitoring wells, START-3 collected groundwater elevations from the wells. The elevations were collected at least one day following well development and before groundwater samples were collected, so that static groundwater levels were allowed to equilibrate. Groundwater elevations were recorded with a water level indicator and/or an oil/water interface probe, depending on whether free product was present in the monitoring well. Each instrument was decontaminated with Alconox and water after testing each well. In addition to the newly installed monitoring wells, START also attempted to collect information, including groundwater elevations and product thickness levels, from as many of the existing site monitoring wells as possible.

Groundwater and product thickness levels are summarized in Table 3-3. As indicated in the table, free product was observed in existing wells HC-4, MW-11, TP-2, and EW-3 and EW-4. Note that of the extraction wells EW-1 through EW-4, START-3 only examined EW-3 and EW-4, so data is not available for EW-1 and EW-2.

START-3 did not observe any free product in the newly installed monitoring wells (EMW-01 through EMW-06). However, note that these monitoring wells had just been installed and developed, and these activities likely pushed away free product present on groundwater. Typically, a minimum period of equilibration time is required following installation and development of a new monitoring well before free product will be observed in a well. As indicated in Section 3.1.2 and Table 3-2, evidence of free product was observed in four of the soil borings that became monitoring wells, including EMW-02, EMW-04, EMW-05, and EMW-06. It may require a longer period of time, perhaps several weeks or months, before free product, if present, will collect in these wells.

In some of the wells, the thickness of the free product could not be determined because the product was too viscous and sticky. When the oil/water interface probe reached the product level, the

thick, viscous, sticky product coated the probe and continued to give the signal for product even after the product had entered water. Therefore, the thickness of the free product could not be accurately measured in these wells. In some of these wells, START-3 verified that a distinct product level floating on groundwater was present with a clear plastic bailer. After lowering the bailer into the well and then raising it back to the surface, a distinct product layer on the groundwater was observed. The product thickness layer was measurable in two of the wells; HC-4 contained 0.88 feet of product, and TP-2 contained 0.72 feet of product.

The depths to groundwater for the existing wells and the newly installed monitoring wells are also included in Table 3-3. While in the field, START-3 surveyed the elevations of newly installed wells relative to one of the existing wells, MW-5, and these groundwater elevations and contours are indicated on Figure 3-3. Groundwater flow direction is to the west-southwest, generally parallel to the direction of the flow of the river.

3.3 SURFACE WATER OBSERVATIONS

The OSC and START-3 inspected the river bank for any evidence of product seeping to the St. Joe River. Product seeps were observed in several areas. There was evidence of past seeps, indicated by oil stains on rocks, along a stretch of the river bank approximately 200 feet long. This section of seep activity is roughly centered on the property boundary, as indicated on Figure 3-2. In some areas, active seeps were observed. In these areas, a heavy petroleum sheen was observed on the surface water, and blooms of oil could be seen floating up from the bottom of the submerged river bank approximately three to five feet from the shoreline. Surface water samples SW-02 and SW-03 were collected from the two active seep areas, while SW-01 was collected upstream as a background sample.

3.4 INVESTIGATION-DERIVED WASTE

Throughout the field activities, START-3 collected soil cuttings and development water as investigation-derived waste. The waste was stored in 55-gallon drums and left on site for future disposal, pending the results of analytical testing. There were a total of 20 drums, including nine of soil cuttings and 11 of development and purge water.

<p align="center">Table 3-1</p> <p align="center">Summary of Borings and Monitoring Wells</p> <p align="center">2007 EPA Removal Assessment</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>				
EPA Boring ID	Installation Date	Total Depth (feet bgs)	Well Diameter (inches)	Screened Interval (feet bgs)
EMW-01	4/16/2007	12.6	2	2.5 - 12.5
EMW-02	4/17/2007	16.0	2	5.5 - 15.5
EMW-03	4/17/2007	19.5	2	9 - 19
EMW-04	4/17/2007	17	2	7 - 17
EMW-05	4/18/2007	19.5	2	9 - 19
EMW-06	4/18/2007	18.8	2	8.5 - 18.5
ESB-01	4/18/2007	9.0	N/A	N/A
ESB-02 ⁽¹⁾	4/18/2007	3, 5, 3 ⁽¹⁾	N/A	N/A
ESB-03	4/18/2007	13.0	N/A	N/A
ESB-04	4/18/2007	9.0	N/A	N/A
ESB-05	4/19/2007	25.0	N/A	N/A
ESB-06	4/19/2007	13.0	N/A	N/A
ESB-07	4/19/2007	17.0	N/A	N/A

Note: (1) ESB-02 met refusal after three attempts.

Key:

bgs = below ground surface
 EMW = EPA monitoring well
 EPA = U.S. Environmental Protection Agency
 ESB = EPA soil boring
 ID = identification
 N/A = not applicable
 START = Superfund Technical Assessment and Response Team

<p align="center">Table 3-2</p> <p align="center">Summary of Free Product Observations in Soil Borings</p> <p align="center">2007 EPA Removal Assessment</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>				
EPA Boring ID	Installation Date	Total Depth (feet bgs)	Free Product Observations	
			Depth Interval (feet bgs)	Observation
EMW-01	4/16/2007	12.6	All	None.
EMW-02	4/17/2007	16.0	5 - 7	Moderately strong hydrocarbon odor.
			7 - 9	Hydrocarbon product.
EMW-03	4/17/2007	19.5	All	None.
EMW-04	4/17/2007	17	11 - 13	Hydrocarbon sheen on groundwater.
			13 - 17	Oily hydrocarbon product present on downhole tools (poor recovery in sampling tool).
EMW-05	4/18/2007	19.5	9 - 11	Strong hydrocarbon odor.
			11 - 13	Strong hydrocarbon odor and sheen.
			13 - 15	Strong hydrocarbon odor; sheen and drops of black product in groundwater.
EMW-06	4/18/2007	18.8	7 - 9	Hydrocarbon odor and sheen.
			9 - 11	Hydrocarbon odor and black oily liquid.
			11 - 13	Sand and gravel are stained black with an oily liquid.
			13 - 18	Soil cuttings contain an oily liquid.
ESB-01	4/18/2007	9.0	7 - 9	Hydrocarbon sheen and odor on groundwater.
ESB-02 ⁽¹⁾	4/18/2007	3, 5, 3 ⁽¹⁾	All	None.
ESB-03	4/18/2007	13.0	9 - 11	Slight hydrocarbon odor.
			11 - 13	Strong hydrocarbon odor, product.
ESB-04	4/18/2007	9.0	3 - 5	Hydrocarbon odor and sheen.
			5 - 7	Hydrocarbon odor.
			7 - 9	Strong hydrocarbon odor and product.
ESB-05	4/19/2007	25.0	3 - 5	Hydrocarbon odor and sheen.
			7 - 9	Strong hydrocarbon odor, light sheen.
			11 - 13	Very dense, black oily liquid with strong hydrocarbon odor.
			15 - 17	Hydrocarbon odor.
ESB-06	4/19/2007	13.0	7 - 9	Hydrocarbon odor.
			11 - 13	Strong hydrocarbon odor and oily liquid.
ESB-07	4/19/2007	17.0	5 - 7	Hydrocarbon odor.
			9 - 11	Increased hydrocarbon odor and sheen.
			13 - 15	Hydrocarbon odor and heavy sheen/product.
			15 - 17	Hydrocarbon odor and heavy sheen/product.

Note: (1) ESB-02 met refusal after three attempts.

Key:

bgs = below ground surface

EMW = EPA monitoring well

EPA = U.S. Environmental Protection Agency

ESB = EPA soil boring

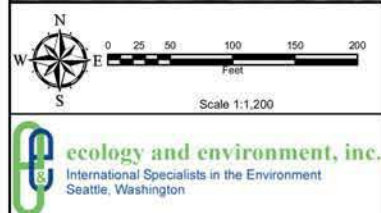
ID = identification

<p align="center">Table 3-3</p> <p align="center">Summary of Groundwater and Free Product Level Data</p> <p align="center">2007 EPA Removal Assessment</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>						
Monitoring Well	Measurement Date	Reference Elevation	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Water Level Elevation
EMW-01	4/21/2007	97.81	--	7.88	0.00	89.93
EMW-02	4/21/2007	97.52	--	8.22	0.00	89.30
EMW-03	4/21/2007	97.90	--	10.79	0.00	87.11
EMW-04	4/21/2007	98.14	--	11.31	0.00	86.83
EMW-05	4/21/2007	100.02	--	11.89	0.00	88.13
EMW-06	4/21/2007	99.15	--	10.79	0.00	88.36
HC-1R	4/21/2007	n/a	--	10.92	0.00	n/a
HC-4	4/17/2007	n/a	10.32	11.20	0.88	n/a
HC-5	4/21/2007	n/a	--	15.18	0.00	n/a
MW-5	4/21/2007	97.76	--	7.89	0.00	89.87
MW-11	4/21/2007	n/a	Present ⁽¹⁾	NA	Present ⁽¹⁾	n/a
TP-1 (2")	4/21/2007	n/a	--	16.80	0.00	n/a
TP-1 (4")	4/21/2007	n/a	--	16.61	0.00	n/a
TP-2	4/21/2007	n/a	12.48	13.20	0.72	n/a
TP-3	4/21/2007	n/a	--	19.92	0.00	n/a
TP-5	4/21/2007	n/a	--	13.57	0.00	n/a
TP-6	4/21/2007	n/a	--	12.57	0.00	n/a
TP-7	4/21/2007	n/a	--	14.17	0.00	n/a
TP-8	4/21/2007	n/a	--	14.84	0.00	n/a
TP-9	4/21/2007	n/a	--	15.58	0.00	n/a
TP-10	4/21/2007	n/a	--	5.42	0.00	n/a
TP-11	4/21/2007	n/a	--	5.41	0.00	n/a
TP-12	4/21/2007	n/a	--	12.54	0.00	n/a
EW-3	4/17/2007	n/a	Present ⁽¹⁾	NA	Present ⁽¹⁾	n/a
EW-4	4/17/2007	n/a	Present ⁽¹⁾	NA	Present ⁽¹⁾	n/a

Notes: (1) A very viscous and sticky product was present; depths and thickness were not determined.

Key:

MSL = mean sea level
n/a = not available
NM = not measured



AVERY LANDING SITE

Avery, Idaho

Figure 3-1
EPA Sample Location Map

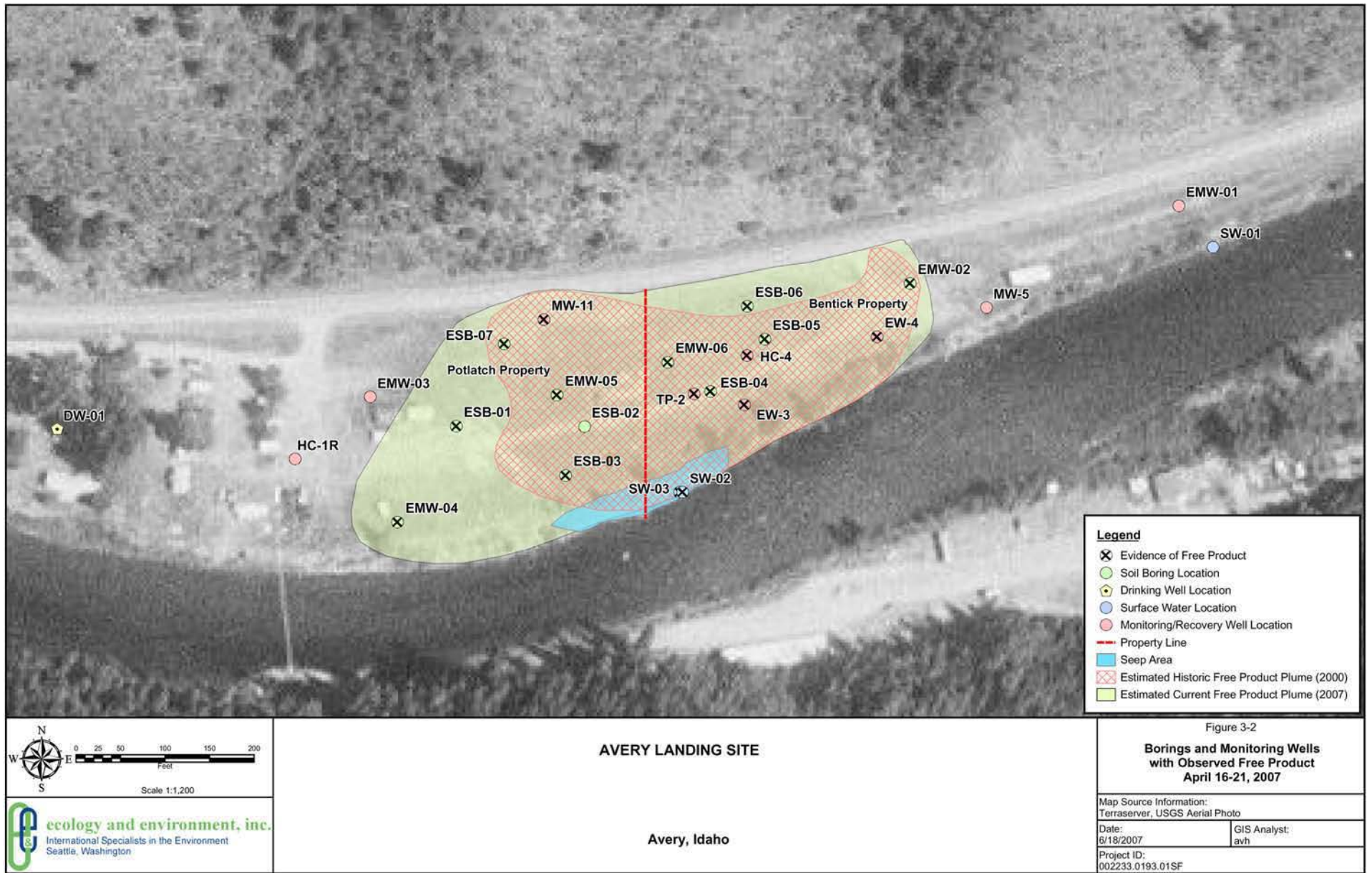
Map Source Information:
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Date:
6/18/2007

GIS Analyst:
avh

Project ID:
002233.0193.01SF

edms-projects\avery_landing\figure 3-1 samp loc map.mxd



ledms-projects\avery_landing\figure 3-2 borings and mw obs free product.mxd



4.0 SAMPLE COLLECTION AND ANALYSIS

For the removal assessment, START-3 collected samples of several different environmental media, including subsurface soil, groundwater, surface water, and product. All samples were collected and analyzed in accordance with the START-3 site-specific sampling plan (SSSP; E & E 2007). Samples were analyzed for VOCs, SVOCs, PCBs, Northwest Total Petroleum Hydrocarbons, Diesel Range Extended (NWTPH-Dx), and target analyte list (TAL) metals at commercial laboratories. Table 4-1 describes the samples collected by START-3, including the sample date, location, event, matrix, and analysis. Sample collection procedures and the results of analyses are described in this section.

4.1 SAMPLE COLLECTION METHODS

4.1.1 Subsurface Soil Samples

Subsurface soil samples were collected from split spoon samplers while the driller performed each boring. In general, one sample for each analytical parameter was collected from each boring. The depth selected for sampling typically depended on visual observations; in general, samples were collected from depth intervals that either were close to the groundwater interface or which exhibited evidence of free product. Sample collection was also performed on those depth intervals that provided good sample recovery. For some of the borings (e.g., ESB-04 and ESB-05), START collected two samples for specific analytes, depending on visual observations or other field conditions. For example, ESB-04 contained product at two distinct levels, so separate samples for SVOCs, PCBs, NWTPH-Dx, and TAL metals were collected at the different depth intervals from this boring.

After the geological information from each split spoon sample was recorded, START-3 placed it in a re-sealable plastic bags until the boring was complete. Once the boring was completed, START-3 selected the depth interval to be sampled for each parameter. Samples for SVOCs, PCBs, NWTPH-Dx, and TAL metals were then collected using dedicated, pre-cleaned stainless steel sampling tools into pre-cleaned glass sample containers provided by the laboratories.

Samples for VOC analyses were collected using SW-846 method 5035 to ensure that undisturbed samples were collected. START-3 used Lock N' Load™ handles and syringes, which collect an approximate 1-gram core of soil for analysis. Each sampling tip was dedicated, pre-cleaned, and used only once to prevent cross-contamination. In order to comply with method 5035, the samples were collected from undisturbed sample cores in the split spoon sampler. For some soil borings (e.g., EMW-04 and ESB-02), there were no undisturbed sample cores, so VOC samples were not collected for these borings.

The soil samples were collected from stainless steel split spoon samplers provided by the driller. The split spoon samplers were decontaminated between each use with hot, high-pressure water. Because the split spoon samplers were not dedicated, START-3 collected a rinsate blank sample (RB-01). The rinsate blank was collected by pouring deionized water over a decontaminated split spoon sampler and collecting the water into pre-cleaned sample containers. The rinsate blank was collected for all five analytical parameters, including VOCs, SVOCs, PCBs, NWTPH-Dx, and TAL metals.

4.1.2 Groundwater Samples

Groundwater samples were collected from the six new EPA monitoring wells, two existing monitoring wells (HC-1R and MW-5), and the on-site domestic well. For all but two monitoring wells, the samples were collected using a peristaltic pump and a low flow technique. Dedicated polyethylene tubing and the peristaltic pump was used to pump water from the well at a target flow rate of approximately 1 liter per minute (L/min). During low flow sampling, START-3 monitored the groundwater for certain water quality parameters, including temperature, pH, conductivity, turbidity, dissolved oxygen, and salinity. The well was considered to have been purged and the sample was collected after the readings stabilized.

For most wells, START-3 was unable to achieve a flow rate of 1 L/min, which is attributed to a combination of the depths to groundwater and the elevation at the site (approximately 2,500 feet above mean sea level). The sample flow rates were much slower than 1 L/min, which increased the time required to purge and collect the samples. Therefore, for the final two monitoring wells, (EMW-02 and EMW-06), START-3 used dedicated bailers to purge water from the well and collect the samples. A minimum of three well volumes was bailed from each well prior to sampling, and START-3 did not monitor the bailed wells for water quality parameters.

After each monitoring well was properly purged, sample collection was performed by pouring water from either the polyethylene tubing or the bailer directly into the pre-cleaned sample bottles.

4.1.3 Surface Water Samples

Surface water samples were collected by dipping a pre-cleaned glass sample bottle into the St. Joe River. At the SW-01 location, the river was deep enough that all of various sample bottle sizes could be dipped into the river. However, for those analytical parameters that required preservative (VOCs, NWTPH-Dx, and TAL metals), a glass bottle without preservative was used to collect the water sample and then pour it into the appropriate pre-preserved sample bottle. At the SW-02 and S-03 location, the surface of the water was just above riprap, and there was not enough depth in the water to use every type of sample bottle. Therefore, a pre-cleaned 8-ounce jar was used to collect the water and then pour it into the appropriate sample bottles.

4.1.4 Product Sample

The product sample from existing monitoring well HC-4 was collected with a dedicated, pre-cleaned polyethylene bailer. Because the sample was product and not groundwater, the well was not purged prior to sampling. The sample was collected directly from the bailer to the appropriate, pre-cleaned sample jars.

4.1.5 Sample Preservation and Storage

Water samples for certain analytical parameters required preservation. Water samples for VOCs and NWTPH-Dx were preserved with hydrochloric acid, and water samples for TAL metals were preserved with nitric acid. In both cases, sufficient acid preservative was added to adjust the pH of the water sample to below a target of 2 standard units. All samples were stored in coolers with ice and maintained at a temperature of approximately 4 degrees Celsius (°C) until START-3 personnel delivered them to the laboratories. Additionally, one trip blank sample (TB-01) was collected for VOC analysis. The trip blank (prepared with deionized water) was provided by the laboratory and was designed to detect any potential cross-contamination of VOCs during sample storage and transfer.

4.1.6 Analytical Parameters

The samples were submitted by START-3 personnel to the analytical laboratories under proper chain of custody. Copies of the chains of custody are presented in Appendix C. Samples were submitted to both STL-Seattle, Inc. (STL) in Tacoma, Washington, and Laucks Testing Laboratories, Inc. (Laucks) in Seattle, Washington. The samples were submitted for the following parameters at the two laboratories:

STL	SVOCs, PCBs ²
Laucks	VOCs, NWTPH-DX, TAL Metals

4.2 SUMMARY OF RESULTS

The analytical results for the samples from the Avery Landing Site are summarized in Tables 4-2 through 4-17. Copies of the analytical data reports and associated data validation memoranda are included in Appendix D. In addition to a presentation of the analytical results, the samples have been compared to applicable or relevant and appropriate requirements (ARARs), which are discussed in the next section.

² Note also that samples were submitted to STL for low-level mercury analyses, in the event that lower detection limits for mercury were required. The low-level mercury analyses were not performed.

4.2.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

For the Avery Landing removal assessment, START-3 compared the analytical results to several federal and state guidelines or standards. Federal ARARs include the National Primary and Secondary Drinking Water Regulations (MCLs; EPA 2003); the EPA Region 6 Human Health Medium-Specific Screening Levels (HHMSSL) for residential soil, industrial soil, and tap water (groundwater and the domestic well sample; EPA 2007a); and the Ambient Water Quality Criteria (AWQC) for fresh surface water (Buchman 1999). State ARARs or criteria to be considered (TBCs) included the Primary and Secondary Constituent Standards for Groundwater³ (IDAPA 58.01.11) and the Idaho Risk Evaluation Manual (REM; DEQ 2004) for soil, groundwater, and surface water. The data summary tables include these ARARs and indicates any compounds that exceed them. Compounds that exceed ARARs are discussed briefly in the following sections, while a more thorough discussion of the sample results compared to the ARARs is presented in Section 4.3.1.

In addition to the ARARs which list specific action levels or cleanup guidelines for specific contaminants, the state of Idaho also regulates petroleum hydrocarbons through the Water Quality Standards (IDAPA 58.01.02) and the Land Remediation Rules (IDAPA 58.01.18). The results of the free product observations will be compared to these standards in Section 4.3.2.

4.2.2 Soil Sample Results

The results of VOC analyses are summarized in Table 4-2. Detected compounds included 2-butanone, with a maximum concentration of 54 J micrograms per kilogram ($\mu\text{g/kg}$); carbon disulfide with a maximum concentration of 3.1 $\mu\text{g/kg}$; chlorobenzene with a maximum concentration of 31 J $\mu\text{g/kg}$; ethylbenzene with a maximum concentration of 540 J $\mu\text{g/kg}$; and xylenes with a maximum concentration of 25 J $\mu\text{g/kg}$. Additional compounds detected included benzene (5.9 J $\mu\text{g/kg}$) and toluene (17 J $\mu\text{g/kg}$), which were both detected in one boring (EMW-01; the background well). In general, most VOC detections in soils were relatively low, and many detections were flagged with a “J” qualifier indicating the result was less than the reporting limit. None of the results exceeded any of the state or federal ARARs.

The results of SVOC analyses are summarized in Table 4-3. Several SVOCs were detected in some of the site samples at concentrations higher than 1,000 $\mu\text{g/kg}$, including 1-methylnaphthalene, with a maximum concentration of 30,000 $\mu\text{g/kg}$ (boring EMW-06); acenaphthene, with a maximum concentration of 3,200 $\mu\text{g/kg}$ (boring EMW-06); 2-methylnaphthalene with a maximum concentration of 44,000 $\mu\text{g/kg}$ (boring EMW-06); fluorene with a maximum concentration of 4,900 $\mu\text{g/kg}$ (boring EMW-06); naphthalene with a maximum concentration of 6,000 J $\mu\text{g/kg}$ (boring ESB-03); and phenanthrene

³ Note that for most compounds, the state groundwater standard is the same as the federal drinking water standard.

with a maximum concentration of 5,800 µg/kg (boring EMW-05). Other SVOCs detected at lower concentrations in the site soil samples include 2-chloronaphthalene, 4-nitroaniline, acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis(2-chloroethoxy)methane, bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenz[a,h]anthracene, dibenzofuran, di-n-butyl phthalate, fluoranthene, indeno[1,2,3-cd]pyrene, and pyrene. Most of the detected compounds are polynuclear aromatic hydrocarbons (PAHs)⁴, and many exceeded state and/or federal ARARs in most of the site samples.

Table 4-4 includes the results of PCB and NWTPH-Dx analyses. Aroclor-1260 was detected in nine of the 13 soil borings, with a maximum concentration of 130 µg/kg in boring EMW-03. Aroclor-1260 was also detected in the background well EMW-01 at a concentration of 9.8 J µg/kg. No other Aroclor was detected, and none of the PCB detections exceeded any of the state or federal ARARs.

The results of the NWTPH-Dx analyses are also in Table 4-4. The results indicate that all of the samples contained diesel-range organics (DRO), and all but one contained oil-range organics (ORO). Ten of the 13 samples contained DRO at concentrations greater than 1,000 milligrams per kilogram (mg/kg), and three were detected at concentrations greater than 10,000 mg/kg⁵. The highest DRO concentration detected was 17,000 mg/kg in ESB-03. ORO was detected in 11 samples at concentrations greater than 1,000 mg/kg and in one sample greater than 10,000 mg/kg. ORO was detected at a maximum concentration of 12,000 mg/kg in EMW-01 (the background boring).

The results of the TAL metals analyses for soil samples are summarized in Table 4-5. Most of the TAL metals were detected in nearly all of the soil samples, and the soil samples were generally similar in the concentrations of metals that they contained. For example, all soil samples contained the following metals at similar concentrations: aluminum ranged from 7,760 to 19,500 mg/kg; arsenic ranged from 4.2 J to 17 J mg/kg; and iron ranged from 15,000 to 24,600 mg/kg. Notable exceptions included lead and mercury. For most samples, lead ranged from approximately 2.3 to 17.3 mg/kg, but it was present in two samples at concentrations of 145 mg/kg (EMW-04 SB 03) and 159 mg/kg (ESB-02 SB 03). Mercury ranged from not detected to 0.0553 J mg/kg in most samples, but it was present in one sample at a concentration of 0.117 mg/kg (ESB-02 SB 03). Several metals were present at concentrations that exceeded ARARs, including arsenic, iron, lead, manganese, and mercury.

⁴ PAHs are a class of over 100 similar compounds that are typically associated with petroleum products. Common PAHs include acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene.

⁵ 10,000 mg/kg is the equivalent of 1% by weight.

4.2.3 Groundwater Sample Results

The VOC results for groundwater samples are summarized in Table 4-6. Only two VOCs were detected, including acetone and chlorobenzene. Acetone was detected in three samples (EMW-03, EMW-04, and HC-1R) at concentrations ranging from 1.6 J to 3.2 J micrograms per liter ($\mu\text{g/L}$). Note, however, that acetone is a common laboratory contaminant. Chlorobenzene was detected in two samples, including EMW-05 at a concentration of 1.4 $\mu\text{g/L}$ and EMW-06 at a concentration of 3.6 $\mu\text{g/L}$. No VOC exceeded any of the state or federal ARARs.

The results of SVOC analyses on groundwater are in Table 4-7. Several PAH and related compounds were detected in several of the site samples. For example, 1-methylnaphthalene was detected in several site samples with a maximum concentration of 210 $\mu\text{g/L}$ (EMW-06), and 2-methylnaphthalene was detected in several samples with a maximum concentration of 270 $\mu\text{g/L}$ (EMW-06). Most of the PAH compounds, including naphthalene, fluorene, acenaphthene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, fluorene, fluoranthene, naphthalene, phenanthrene, and pyrene, were also detected in several of the site samples. Several non-PAH compounds were also detected; for example, the chlorinated compound 1,2-dichlorobenzene was detected in several samples at low concentrations (maximum concentration of 0.53 J $\mu\text{g/L}$ in EMW-06), and 1,4-dichlorobenzene was also detected at trace levels (0.051 J $\mu\text{g/L}$) in EMW-06. N-Nitrosodiphenylamine was also detected in EMW-06 at a concentration of 12 $\mu\text{g/L}$. Bis(2-ethylhexyl) phthalate was detected in several of the site samples, but note that phthalates are components of plastic; they are often present in plastic well casing materials, and they are also common laboratory contaminants. In general, monitoring well EMW-06 contained the highest concentrations of those compounds that were detected, and several of the compounds in EMW-06 and other site wells exceeded state and federal ARARs. The background well EMW-01 did contain a few of the PAH compounds at trace concentrations. The domestic well DW-01 contained a trace amount of anthracene (0.0026 J $\mu\text{g/L}$) and some phthalates.

Table 4-8 presents the results of PCBs and NWTPH-Dx for groundwater samples. PCBs were detected in only one well; EMW-06 contained Aroclor 1260 at a concentration of 0.028 J $\mu\text{g/L}$, and this concentration exceeded the Idaho REM guideline. DRO was detected in all of the wells except MW-05, and ORO was detected in all wells but EMW-01 and the domestic well DW-01. EMW-06 contained the highest concentrations of both, with DRO at a concentration of 110,000 $\mu\text{g/L}$ and ORO at a concentration of 45,000 $\mu\text{g/L}$. Six of the nine wells on site contained both DRO and ORO. Note also that the upgradient well EMW-01 contained DRO at a concentration of 83 $\mu\text{g/L}$, and the domestic well DW-01 contained DRO at a concentration of 79 $\mu\text{g/L}$.

Table 4-9 summarizes the results of TAL metals for groundwater samples. Aluminum was detected at a maximum concentration of 32,200 µg/L in EMW-06. Arsenic was detected in all of the samples, and it was detected at concentrations higher than 10 µg/L (the Idaho REM guideline) in six of the samples. Arsenic was detected at a maximum concentration of 88.6 µg/L in EMW-02. Iron was detected in several samples at concentrations greater than most of the ARARs, with a maximum concentration of 80,500 µg/L in EMW-06. Lead was detected in one sample (EMW-06) at a concentration of 39.8 µg/L, which exceeds state and federal ARARs. Manganese was detected at elevated concentrations (above state and federal ARARs) in several site samples, with a maximum concentration of 5,630 µg/L in HC-1R. In general, concentrations of metals were lower in EMW-01, MW-5, and the domestic well DW-01.

4.2.4 Surface Water Sample Results

The results for VOC analyses performed on the surface water samples are presented in Table 4-10. No VOCs were detected in any of the surface water samples.

Table 4-11 presents the SVOC results for the surface water samples. The upstream/background sample (SW-01) did not contain any SVOCs. The two samples located near active seep areas (SW-02 and SW-03) did contain relatively low concentrations of SVOCs, including 1-methylnaphthalene (0.041 and 0.34 µg/L, respectively), 2-methylnaphthalene (0.014 J and 0.11 µg/L), and other PAHs. All concentrations were less than 1.0 µg/L, and concentrations in SW-03 were generally higher than those in SW-02. SW-03 also contained a few PAH compounds that were not present in SW-02, including benzo[a]anthracene at 0.011 J µg/L, benzo[a]pyrene at 0.027 µg/L, benzo[b]fluoranthene at 0.023 J µg/L, and chrysene at 0.016 J µg/L. All three of these PAHs were present at concentrations in SW-03 that exceeded the Idaho REM guideline for surface water. Additionally, benzo[a]pyrene exceeded the federal AWQC.

Table 4-12 presents the results of PCBs and NWTPH-Dx for surface water. PCBs were not detected in any of the surface water samples. The upstream sample (SW-01) did not contain either DRO and ORO. DRO was present in both SW-02 (320 µg/L) and SW-03 (2,300 µg/L), and ORO was present in SW-03 (1,200 µg/L).

The TAL metals results for surface water are presented in Table 4-13. Generally, the results indicate that metals concentrations in the three samples were very similar. Arsenic, barium, calcium, iron, magnesium, manganese, potassium, and sodium were all detected in the three samples, including the upstream sample (SW-01), at very similar concentrations. Barium exceeded the federal AWQC (4.0 µg/L) in all three samples (results ranged from 4.71 J to 5.11 J µg/L).

4.2.5 Product Sample Results

Table 4-14 presents the results of VOC analysis on the product sample from HC-4. The sample contained bromodichloromethane at a concentration of 1,500 J µg/L, chlorobenzene at a concentration of 1,600 J µg/L, and methylene chloride⁶ at a concentration of 2,700 µg/L. No other VOC was detected, and none of the ARARs identified for the site applies to the product sample.

Table 4-15 presents the results of the SVOC analyses of the product sample. The SVOCs with the highest concentrations included 1-methylnaphthalene at 1,700,000 µg/kg and 2-methylnaphthalene at 2,400,000 µg/kg. Other SVOCs detected at lower concentrations included the PAHs acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. None of the site ARARs applies to the product sample.

The results of the PCB and NWTPH-Dx analyses are presented in Table 4-16. The product sample contained Aroclor-1260 at a concentration of 330 J µg/kg. No other Aroclor was detected. The product sample contained DRO at a concentration of 1,100,000 mg/kg. Note that the reported concentration is greater than 100%. This is a common occurrence with product analysis, and it is an artifact of the analytical process whereby a small aliquot of sample is diluted for analysis and then the diluted concentration is multiplied by the dilution factor to obtain the sample concentration. Effectively, the sample is primarily diesel, with a smaller concentration of ORO (260,000 mg/kg).

Table 4-17 presents the results of the TAL metals analysis of the product sample. The results indicate that many of the TAL metals were detected in the product sample, including aluminum at a concentration of 71.2 mg/kg, arsenic at a concentration of 3.1 mg/kg, chromium at a concentration of 3.4 mg/kg, and lead at a concentration of 1.6 mg/kg.

4.3 SUMMARY OF ARAR EXCEEDENCES

4.3.1 Analytical Data

Tables 4-18 through 4-21 have been prepared to further summarize the analytical data relative to the site ARARs. These tables present only those compounds that were present in any of the site samples in concentrations greater than any of the state or federal standards or guidelines that were determined to be ARARs or TBCs for the site. Additionally, these tables present the samples separated by property (e.g., Bentsick and Potlatch properties). Figures 4-1 through 4-4 also present this data graphically.

Table 4-18 and Figure 4-1 present those compounds in the subsurface soil samples that exceeded the EPA Region 6 HHMSSL for residential soil. Of the SVOCs, benzo[a]pyrene exceeded the HHMSSL of 15 µg/kg in most of the site samples, benzo[a]anthracene exceeded the HHMSSL of 150 µg/kg in two

⁶ Note that methylene chloride is also a common laboratory contaminant.

of the site samples, and benzo[b]fluoranthene exceeded the HHMSSL of 150 µg/kg in one site sample. Arsenic also exceeded the HHMSSL of 0.39 mg/kg in all of the site samples. However, note that the upper limit of background soil concentrations for arsenic in the nearby Coeur d'Alene and Spokane River basins is 22 mg/kg (URS Greiner 2001). Also, all of the arsenic results are estimated values, because the matrix spike results were biased high (i.e., arsenic concentrations were likely over-estimated.) With the exception of benzo[b]fluoranthene, the exceedences were evenly distributed over the two properties. There were no federal exceedences in soil for VOCs or PCBs, and there are no regulatory standards for DRO/ORO.

Table 4-19 and Figure 4-2 present state exceedences for the soil samples. Because many of the State of Idaho REM guidelines are lower than EPA's HHMSSL guidelines, there are more exceedences listed in this table. For SVOCs, 2-methylnaphthalene, benzo[a]pyrene, and naphthalene exceeded the applicable REM guideline in many of the site samples on both properties. Additionally, 4-nitroaniline, benzo[a]anthracene, and benzo[b]fluoranthene each exceeded the applicable guidelines in only one sample, all on the Benticik property. The metals arsenic, iron, lead, manganese, and mercury exceeded applicable guidelines, and the distribution between the two properties was fairly even. For the arsenic results, though, the same qualifiers discussed in the preceding paragraph apply. For mercury, note that with the exception of the result for ESB-02 (0.117 mg/kg), the results are estimated values less than the reporting limit. There were no state exceedences in soil for VOCs or PCBs, and there are no regulatory standards for DRO/ORO.

Federal exceedences in water samples are presented in Table 4-20 and Figure 4-3. For SVOCs in groundwater, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, and naphthalene all exceeded the EPA HHMSSL for tap water. Most of these SVOC exceedences (with the exception of two) occurred on the Benticik property (in EMW-02 and EMW-06, only). For metals in groundwater, aluminum, arsenic, iron, lead, and manganese exceeded either the HHMSSL for tap water and/or the drinking water MCL in the site samples. With the exception of aluminum and lead, which exceeded the MCL in more samples and/or at higher concentrations on the Benticik property, the metals exceedences in groundwater was fairly evenly distributed across the two properties. There were no federal exceedences in groundwater for VOCs or PCBs, and there are no regulatory standards for DRO/ORO. For surface water, only one SVOC (benzo[a]pyrene) exceeded the federal AWQC. There were no federal exceedences in surface water for VOCs, PCBs, or TAL metals⁷, and there are no regulatory standards for DRO/ORO.

⁷ Not including barium, which was detected at similar concentrations above the federal AWQC in all three surface water samples, including the upstream/background sample SW-01.

Table 4-21 and Figure 4-4 present state exceedences for water samples. For SVOCs, 2-methyl naphthalene, benzo[a]anthracene, benzo[a]pyrene, benzo[a]fluoranthene, and N-nitrosodiphenyl amine exceeded the applicable Idaho REM guidelines in two site samples (EMW-02 and EMW-06), both of which are located on the Bencik property. Additionally, benzo[a]pyrene exceeded the state groundwater standard of 0.20 µg/L in EMW-02 and EMW-06. For metals, aluminum, arsenic, iron, lead⁸, and manganese exceeded the state groundwater standards in EMW-02 and/or EMW-06 on the Bencik property, and arsenic, iron, and manganese exceed the state groundwater standards in EMW-03, EMW-04, EMW-05, and HC-1R on the Potlatch property. Aluminum also exceeded the state groundwater standard in EMW-05 on the Potlatch property. Additionally, arsenic, iron, and manganese exceeded the Idaho REM guidelines in several wells on both properties, and lead exceeded the REM guideline in EMW-06 on the Bencik property. The PCB Arcolor-1260 exceeded the Idaho REM guideline in EMW-06 on the Bencik property. No VOC state exceedences occurred in groundwater samples, and there are no regulatory standards for DRO/ORO. For surface water, four SVOC compounds (benzo[a]anthracene, benzo[a]pyrene, benzo[a]fluoranthene, and chrysene) exceeded the applicable Idaho REM guideline in SW-03.

4.3.2 Free Product Observations

Although there are no state regulatory standards for DRO and ORO, petroleum hydrocarbons are still regulated by the state of Idaho. Idaho Water Quality Standards (IDAPA 58.01.02) defines free product as a petroleum product that is present as a non-aqueous phase liquid on surface water or the water table at greater than one-tenth (0.1) inch (IDAPA 58.01.02.010.38). The Water Quality Standards also require owners and operators of a site with free product to “remove free product to the maximum extent practicable” (IDAPA 58.01.02.852.04). Additionally, the presence of free product or a sheen on surface water subjects the owner/operator to notification and/or cleanup requirements (IDAPA 58.01.02 851.04 and 58.01.02.852.05). START-3 observed free product in two existing site wells at thicknesses of 0.88 and 0.72 feet, which are greater than 0.1 inch, and in three other existing wells where the thickness could not be determined. Free product will also likely be observed in the newly installed monitoring wells after site groundwater conditions are able to equilibrate. START-3 also observed free product and sheens in the St. Joe River.

The Idaho Land Remediation Rules (IDAPA 58.01.18) also address petroleum contamination in soil and require that petroleum contamination be addressed through remediation to appropriate remediation standards, which include attainment of natural background levels (IDAPA 58.01.18.023). As

⁸ Lead exceeded the state groundwater standard in EMW-06, only.

discussed in Section 3.1.2, START-3 observed evidence of free product in soil samples from 10 of the 13 soil borings.

The results of the NWTPH-Dx analyses confirm the presence of petroleum hydrocarbons in soil, groundwater, and surface water samples from the site. These results and the visual observations made by START-3 during the site investigation document that free product is present at the site on groundwater, on surface water, and in the subsurface soil at levels that exceed applicable state regulatory standards.

Although the state of Idaho does not use DRO or ORO action levels to regulate petroleum, the state of Washington does. The Model Toxics Control Act (MTCA) Method A soil cleanup level for unrestricted use (i.e., residential) is 2,000 mg/kg for DRO and 2,000 mg/kg for heavy oils (ORO). The MTCA Method A cleanup level for groundwater is 500 µg/L for DRO and 500 µg/L for heavy oils (ORO). Although these cleanup levels are not ARARs for the Avery Landing site, they are being included as TBCs to identify potential cleanup guidelines for the site. Of the 13 soil samples analyzed for NWTPH-Dx, 11 contained either DRO, ORO, or both at concentrations that exceeded 2,000 mg/kg. In the site soil samples, DRO was detected at a maximum concentration of 17,000 mg/kg, and ORO was detected at a maximum concentration of 12,000 mg/kg. Of the nine groundwater samples, six contained both DRO and ORO at concentrations that exceeded 500 µg/L, with DRO detected at a maximum concentration of 110,000 µg/L, and ORO detected at a maximum concentration of 45,000 µg/L.

4.4 COMPARISON OF SOIL RESULTS TO SEDIMENT GUIDELINES

Because of the active seeps of petroleum product to the river and the presence of free product on the groundwater directly adjacent to the river, there is a potential impact to river sediments. However, START-3 was unable to collect sediment samples from the site because of the large riprap that covered the bank of the St. Joe River. To assess potential impacts to sediment, the soil results have been compared to the consensus-based freshwater sediment quality guidelines (SQGs; MacDonald et al. 2000). Because sediment samples were not collected, the SQGs were not included in the data summary tables and they were not included in the ARAR discussions in Section 4.3. However, there is a potential relationship between soil and sediment; some zones of the river bank may be submerged for part of the year and be considered sediment, while they may be considered soil at times of lower river stage. Additionally, erosion or earthwork performed on the bank may lead to exposed subsurface soil that may then be considered as sediment. To evaluate the potential impacts if site sediments contained the types and levels of contamination similar to that found in the soil, the soil results have been compared to the sediment SQGs.

Table 4-22 presents a comparison of soil results to applicable SQGs. For this comparison, the consensus-based threshold effect concentrations (TECs) were used. TECs were available for PAHs (subset of SVOCs), PCBs, and metals. For clarity, Table 4-22 only includes those compounds with an associated TEC. The comparison indicates that many of the compounds detected in the soil samples exceeded the sediment TECs. All but one of the PAH compounds with a TEC value were present in the site soil samples at concentrations that exceeded the applicable sediment TEC. Aroclor-1260 was detected in one sample at a concentration that exceeded the sediment TEC for total PCBs. Of the metals, arsenic, copper, lead, and nickel were all present at concentrations in the soil that exceeded the applicable sediment TEC.

Table 4-1

**Summary of START-3 Samples
Avery Landing Site
Avery, Idaho**

EPA Sample ID	Location ID	Sample Date	Sample Time	Matrix	Analyses
07040101	EMW-01 SB 06	4/16/2007	15:00	Soil	VOCs
07040102	EMW-01 SB 02	4/16/2007	15:15	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040103	EMW-02 SB 05	4/17/2007	8:15	Soil	VOCs
07040104	EMW-02 SB 07	4/17/2007	8:25	Soil	SVOCs and PCBs
07040105	EMW-02 SB 05	4/17/2007	8:40	Soil	TAL Metals and NWTPH-Dx
07040106	EMW-03 SB 11	4/17/2007	11:45	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040107	EMW-03 SB 11	4/17/2007	11:45	Soil	VOCs
07040108	EMW-04 SB 03	4/17/2007	14:50	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040109	EMW-05 SB 09	4/18/2007	7:51	Soil	VOCs
07040110	EMW-05 SB 09	4/18/2007	8:00	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040111	RB-01 (Rinse Blank)	4/18/2007	9:00	Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040112	EMW-06 SB 07	4/18/2007	10:40	Soil	VOCs
07040113	EMW-06 SB 07	4/18/2007	10:50	Soil	TAL Metals
07040114	EMW-06 SB 09	4/18/2007	10:50	Soil	SVOCs, PCBs, and NWTPH-Dx
07040115	ESB-01 SB 07	4/18/2007	13:45	Soil	VOCs
07040116	ESB-01 SB 07	4/18/2007	13:45	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040117	ESB-02 SB 03	4/18/2007	14:45	Soil	SVOCs, PCBs, and TAL Metals
07040118	ESB-03 SB 09	4/18/2007	15:45	Soil	VOCs
07040119	ESB-03 SB 11	4/18/2007	15:55	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040120	ESB-04 SB 03	4/18/2007	16:50	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040121	ESB-04 SB 07	4/18/2007	16:50	Soil	VOCs
07040122	ESB-04 SB 07	4/18/2007	16:50	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040123	ESB-05 SB 09	4/19/2007	7:50	Soil	VOCs
07040124	ESB-05 SB 15	4/19/2007	8:08	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040125	ESB-05 SB 23	4/19/2007	9:15	Soil	SVOCs and PCBs
07040126	ESB-06 SB 09	4/19/2007	11:04	Soil	VOCs
07040127	ESB-06 SB 11	4/19/2007	11:11	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040128	ESB-07 SB 07	4/19/2007	12:07	Soil	VOCs
07040129	ESB-07 SB 13	4/19/2007	12:29	Soil	SVOCs, PCBs, TAL Metals, and NWTPH-Dx
07040130	TB-01 (Trip Blank)	4/20/2007	15:00	Water	VOCs
07040131	HC-4	4/20/2007	9:50	Product	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040132	SW-01	4/20/2007	10:45	Surface Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040133	SW-02	4/20/2007	11:20	Surface Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040134	SW-03	4/20/2007	12:00	Surface Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040135	EMW-01	4/21/2007	9:15	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040136	EMW-02	4/21/2007	17:50	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040137	EMW-03	4/21/2007	12:00	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040138	EMW-04	4/21/2007	14:16	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040139	EMW-05	4/21/2007	15:47	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040140	EMW-06	4/21/2007	17:45	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040141	HC-1	4/21/2007	13:10	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040142	MW-5	4/21/2007	10:53	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx
07040143	DW-01	4/21/2007	14:20	Ground Water	SVOCs, VOCs, PCBs, TAL Metals, and NWTPH-Dx

Note: The two digits at the end of the soil sample Location ID indicates the depth, in feet below ground surface, where the sample was collected.

Key:

DW	= domestic well
EMW	= EPA monitoring well
EPA	= U.S. Environmental Protection Agency
ESB	= EPA soil boring
HC	= Hart Crowser
ID	= identification
MW	= monitoring well
NWTPH-Dx	= Northwest Total Petroleum Hydrocarbons, Diesel-Range Extended
PCBs	= polychlorinated biphenyls
RB	= rinse blank
SB	= soil boring
START	= Superfund Technical Assessment and Response Team
SVOCs	= semivolatile organic compounds
SW	= surface water
TAL	= Target Analyte List (Metals)
TB	= trip blank

Table 4-2															
Summary of Volatile Organic Compound Results in Soil Samples															
Avery Landing Site															
Avery, Idaho															
Sample Number:	07040101	07040103	07040107	07040109	07040112	07040115	07040118	07040121	07040123	07040126	07040128	07040111	ARARs		
Sample Location:	EMW-01 SB 06	EMW-02 SB 05	EMW-03 SB 11	EMW-05 SB 09	EMW-06 SB 07	ESB-01 SB 07	ESB-03 SB 09	ESB-04 SB 07	ESB-05 SB 09	ESB-06 SB 09	ESB-07 SB 07	RB-01 (Rinsate Blank)	Idaho REM ⁽¹⁾	EPA Region 6 Residential ⁽²⁾	EPA Region 6 Industrial ⁽²⁾
VOCs (µg/kg)	(µg/L)														
1,1,1-Trichloroethane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	2,000	1,385,378	1,385,378
1,1,2,2-Tetrachloroethane	3.3 UJ	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 UJ	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	0.92	384	970
1,1,2-Trichloroethane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	14	844	2,078
1,1-Dichloroethane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	3,479	845,964	2,332,719
1,1-Dichloroethene	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	39	280,000	470,000
1,2-Dichloroethane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	7.7	350	840
cis-1,2-Dichloroethene	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	193	43,000	160,000
trans-1,2-Dichloroethene	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	365	120,000	200,000
1,2-Dichloropropane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	8.9	351	847
cis-1,3-Dichloropropene	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	2.4	700	1,700
trans-1,3-Dichloropropene	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	2.4	700	1,700
2-Butanone	24 J	21	17	29	39 J	9.6 U	10 U	31 J	26 J	54 J	19 J	5.0 U	11,800	32,000,000	32,000,000
2-Hexanone	6 J	13 U	13 U	8.5 U	12 UJ	9.6 U	10 U	11 UJ	11 U	12 U	9 UJ	5.0 U	n.a.	n.a.	n.a.
4-Methyl-2-pentanone	11 U	13 U	13 U	8.5 U	12 UJ	9.6 U	10 U	11 UJ	11 U	12 U	9 UJ	5.0 U	n.a.	n.a.	n.a.
Acetone	85 J	130	93	160	190 J	16 J	6.1 J	230 J	110 J	150 J	78	2.0 J	17,405	14,150,596	60,479,805
Benzene	5.9 J	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	18	656	1,598
Bromodichloromethane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	2.7	1,026	2,559
Bromoform	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	29	62,000	240,000
Bromomethane	3.3 UJ	3.9 UJ	3.9 UJ	2.6 UJ	3.5 UJ	2.9 UJ	3.1 UJ	3.4 UJ	3.4 UJ	3.6 UJ	2.7 UJ	1.0 U	50	3,905	14,561
Carbon disulfide	3.3 U	3.9 U	3.9 U	3.1	2.3 J	2.9 U	3.1 U	2.0 J	2.1 J	3.6 U	2.7 UJ	1.0 U	5,971	721,254	721,254
Carbon tetrachloride	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	11	240	582
Chlorobenzene	3.3 U	3.9 U	3.9 U	2.6 U	13 J	2.9 U	3.1 U	13 J	31 J	3.6 U	2.7 UJ	1.0 U	618	273,175	503,436
Chloroethane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	53	n.a.	n.a.
Chloroform	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	5.6	245	580
Chloromethane	3.3 U	3.9 U	3.9 UJ	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	23	1,261	2,982
Dibromochloromethane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	n.a.	n.a.	n.a.
Dichlorodifluoromethane	3.3 UJ	3.9 UJ	3.9 UJ	2.6 UJ	3.5 UJ	2.9 UJ	3.1 UJ	3.4 UJ	3.4 UJ	3.6 UJ	2.7 UJ	1.0 U	2,957	94,077	339,733
Ethylbenzene	2.7 J	3.8 J	3.9 U	56	3.5 UJ	2.9 U	3.1 U	3.4 UJ	540 J	13 J	1.8 J	1.0 U	10,200	233,948	233,948
Methylene chloride	3.3 U	5.1 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	7.9 U	2.7 UJ	3.7	17	8,898	22,254
Styrene	2.8 J	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	1,830	1,733,844	1,733,844
Tetrachloroethene	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	24 U	3.6 U	2.7 UJ	1.0 U	29	550	1,700
Toluene	17 J	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	4,885	521,170	521,170
Trichloroethene	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	2.9	43	100
Trichlorofluoromethane	3.3 U	3.9 U	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	10,376	386,624	1,420,861
Vinyl chloride	3.3 U	3.9 U	3.9 UJ	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	3.4 U	3.6 U	2.7 UJ	1.0 U	10	43	863
m,p-Xylene	7.1 J	7.8 U	7.7 U	6.4	7.1 UJ	5.8 U	6.2 U	6.7 UJ	25 J	7.2 U	2 J	2.0 U	1,666 ⁽³⁾	210,000 ⁽³⁾	210,000 ⁽³⁾
o-Xylene	4.0 J	3.5 J	3.9 U	2.6 U	3.5 UJ	2.9 U	3.1 U	3.4 UJ	15 J	7.8 J	4.1 J	1.0 U	1,666 ⁽³⁾	210,000 ⁽³⁾	210,000 ⁽³⁾

Notes:

Italics indicates the compound was not detected.

Bold type indicates the compound exceeded the Idaho REM value.

Underline type indicates the compound exceeded the EPA Region 6 residential guideline.

Highlighted cell indicates the compound exceeded the EPA Region 6 industrial guideline.

(1) Idaho Risk Evaluation Manual (DEQ 2004).

(2) EPA Region 6 Medium-Specific Human Health Screening Levels (EPA 2007a).

(3) Xylene standards are for total xylene.

Key:

ARAR = applicable or relevant and relevant requirement

ID = identification

J = estimated value

µg/kg = micrograms per kilogram

µg/L = micrograms per liter

REM = Risk Evaluation Manual

U = not detected (at the indicated reporting limit)

UJ = not detected (estimated reporting limit)

Table 4-3											
Summary of Semivolatile Organic Compound Results in Soil Samples Avery Landing Site Avery, Idaho											
Sample ID:	07040102	07040104	07040106	07040108	07040110	07040114	07040116	07040117	ARARs		
Sample Location:	EMW-01 SB 02	EMW-02 SB 07	EMW-03 SB 11	EMW-04 SB 03	EMW-05 SB 09	EMW-06 SB 09	ESB-01 SB 07	ESB-02 SB 03	Idaho REM	EPA Region 6 Residential ⁽¹⁾	EPA Region 6 Industrial ⁽²⁾
SVOCs (µg/kg)											
1,2,4-Trichlorobenzene	55 U	59 U	6.9 U	54 U	63 U	66 U	56 U	55 U	692	142,520	264,776
1,2-Dichlorobenzene	55 U	59 U	6.9 U	54 U	63 U	66 U	56 U	55 U	5,253	278,923	372,612
1,3-Dichlorobenzene	55 U	59 U	6.9 U	54 U	63 U	66 U	56 U	55 U	229	68,534	144,219
1,4-Dichlorobenzene	55 U	59 U	6.9 U	54 U	63 U	66 U	56 U	55 U	76	3,197	8,067
1-Methylnaphthalene	33 U	400	4.1 U	33 U	16,000	30,000	33 U	130	n.a.	n.a.	n.a.
2,4,5-Trichlorophenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
2,4,6-Trichlorophenol	160 U	180 U	21 U	160 U	190 U	200 U	170 U	170 U	n.a.	n.a.	n.a.
2,4-Dichlorophenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	98	183,309	2,052,021
2,4-Dimethylphenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
2,4-Dinitrophenol	1,100 U	1,200 U	140 U	1,100 U	1,300 U	1,300 U	1,100 U	1,100 U	n.a.	n.a.	n.a.
2,4-Dinitrotoluene	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
2,6-Dinitrotoluene	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
2-Chloronaphthalene	22 U	24 U	2.7 U	22 U	25 U	26 U	22 U	22 U	n.a.	n.a.	n.a.
2-Chlorophenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	365	63,511	262,495
2-Methylnaphthalene	22 U	210	2.7 U	36	23,000	44,000	22 U	210	3,310	n.a.	n.a.
2-Methylphenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
2-Nitroaniline	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
2-Nitrophenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
3 & 4 Methylphenol	220 U	240 U	27 U	220 U	250 U	260 U	220 U	220 U	n.a.	n.a.	n.a.
3,3'-Dichlorobenzidine	220 U	240 U	27 U	R	250 U	260 U	220 U	220 U	n.a.	n.a.	n.a.
3-Nitroaniline	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
4,6-Dinitro-2-methylphenol	1,100 U	1,200 U	140 U	R	1,300 U	1,300 U	1,100 U	1,100 U	n.a.	n.a.	n.a.
4-Bromophenyl phenyl ether	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
4-Chloro-3-methylphenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
4-Chloroaniline	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	126	244,412	2,736,028
4-Chlorophenyl phenyl ether	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
4-Nitroaniline	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	30	n.a.	n.a.
4-Nitrophenol	1,100 U	1,200 U	140 U	1,100 U	1,300 U	1,300 U	1,100 U	1,100 U	n.a.	n.a.	n.a.
Acenaphthene	22 U	160	6.3	22 U	1,500	3,200	22 U	22 U	52,264	3,683,396	32,502,818
Acenaphthylene	22 U	24 U	2.7 U	5.7 J	25 U	26 U	22 U	22 U	78,017	n.a.	n.a.
Anthracene	14 J	91	2.7 U	7.1 J	700	250	22 U	6.5 J	1,040,119	21,899,672	100,000,000
Benzo[a]anthracene	27 U	120	3.4 U	38 J	210	53	28 U	29	422	150	2,300
Benzo[a]pyrene	33 U	85	4.1 U	58	110	39 U	33 U	43	42	15	230
Benzo[b]fluoranthene	22 U	52	2.7 U	59	110	26 U	22 U	52	422	150	2,300
Benzo[g,h,i]perylene	27 U	57	3.4 U	59	57	33 U	28 U	57	1,177,982	n.a.	n.a.
Benzo[k]fluoranthene	27 U	30 U	3.4 U	27 J	31 U	33 U	28 U	11 J	4,218	1,500	23,000
Benzoic acid	2,700 U	3,000 U	340 U	R	3,100 U	3,300 U	2,800 U	2,800 U	77,150	100,000,000	100,000,000
Benzyl alcohol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
Bis(2-chloroethoxy)methane	110 U	120 U	14 U	110 U	77 J	130 U	110 U	110 U	n.a.	n.a.	n.a.
Bis(2-chloroethyl)ether	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	0	211	616
Bis(2-chloroisopropyl) ether	160 U	180 U	21 U	160 U	190 U	200 U	170 U	170 U	n.a.	n.a.	n.a.
Bis(2-ethylhexyl) phthalate	1,600 U	1,800 U	44 J	1,600 U	1,900 U	2,000 U	1,700 U	1,700 U	11,836	35,000	140,000
Butyl benzyl phthalate	38 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	511,168	240,477	240,477
Carbazole	160 U	180 U	21 U	160 U	190 U	200 U	170 U	170 U	n.a.	n.a.	n.a.
Chrysene	27 U	180	3.4 U	48	360	120	28 U	37	33,366	14,762	234,414
Dibenz[a,h]anthracene	44 U	47 U	5.5 U	36 J	50 U	53 U	45 U	40 J	42	15	230
Dibenzofuran	110 U	120 U	14 U	110 U	130 U	130 U	110 U	38 J	6,099	145,284	1,737,888
Diethyl phthalate	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	27,531	49,000,000	100,000,000
Dimethyl phthalate	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	270,813	100,000,000	100,000,000
Di-n-butyl phthalate	220 U	69 U	9.8 U	74 J	250 U	260 U	220 U	58 U	30,989	n.a.	n.a.
Di-n-octyl phthalate	220 U	240 U	27 U	220 U	250 U	260 U	220 U	220 U	1,828,814	n.a.	n.a.
Fluoranthene	26	65	2.7 U	61 J	460	99	22 U	33	363,512	2,293,610	24,444,837
Fluorene	22 U	180	9.7	22 U	2,800	4,900	22 U	22 U	54,836	2,644,486	26,221,983
Hexachlorobenzene	55 U	59 U	6.9 U	54 U	63 U	66 U	56 U	55 U	43	304	1,197
Hexachlorobutadiene	55 U	59 U	6.9 U	54 U	63 U	66 U	56 U	55 U	38	6,236	24,554
Hexachlorocyclopentadiene	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	12	365,487	4,065,241
Hexachloroethane	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	138	34,741	136,801
Indeno[1,2,3-cd]pyrene	44 U	51 J	5.5 U	75 J	50 U	53 U	45 U	55 J	422	150	7,800
Isophorone	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
Naphthalene	22 U	81	2.7 U	19 J	3,600	4,700	22 U	100	1,144	124,798	208,984
Nitrobenzene	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
N-Nitrosodi-n-propylamine	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	n.a.	n.a.	n.a.
N-Nitrosodiphenylamine	55 U	59 U	6.9 U	54 U	63 U	66 U	56 U	55 U	0.002	99,261	390,861
Pentachlorophenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	9.1	2,979	9,998
Phenanthrene	22 U	420	2.7 U	43	5,800	3,800	22 U	89	79,042	n.a.	n.a.
Phenol	110 U	120 U	14 U	110 U	130 U	130 U	110 U	110 U	7,358	18,331,473	100,000,000
Pyrene	44	370	2.7 U	65	840	240	22 U	43	359,215	2,308,756	31,979,385

Key is on last page.

Table 4-3 (Continued)											
Summary of Semivolatile Organic Compound Results in Soil Samples Avery Landing Site Avery, Idaho											
Sample ID:	07040119	07040120	07040122	07040124	07040125	07040127	07040129	07040111	ARARs		
Sample Location:	ESB-03 SB 11	ESB-04 SB 03	ESB-04 SB 07	ESB-05 SB 15	ESB-05 SB 23	ESB-06 SB 11	ESB-07 SB 13	RB-01 (Rinsate Blank)	Idaho REM	EPA Region 6 Residential ⁽¹⁾	EPA Region 6 Industrial ⁽²⁾
SVOCs (µg/kg)									(µg/L)		
1,2,4-Trichlorobenzene	65 UJ	550 U	63 U	56 U	5.4 U	61 UJ	54 U	0.22 U	690	142,520	264,776
1,2-Dichlorobenzene	65 UJ	550 U	63 U	56 U	5.4 U	61 UJ	54 U	0.22 U	5,253	278,923	372,612
1,3-Dichlorobenzene	65 UJ	550 U	63 U	56 U	5.4 U	61 UJ	54 U	0.22 U	229	68,534	144,219
1,4-Dichlorobenzene	65 UJ	550 U	63 U	56 U	5.4 U	61 UJ	54 U	0.22 U	76	3,197	8,067
1-Methylnaphthalene	10,000	1,000	12,000	2,200	79	8,300	2,800	0.012 J	n.a.	n.a.	n.a.
2,4,5-Trichlorophenol	130 U	R	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
2,4,6-Trichlorophenol	190 U	R	190 U	170 U	16 U	180 UJ	R	0.33 U	n.a.	n.a.	n.a.
2,4-Dichlorophenol	130 UJ	R	130 U	110 U	11 U	120 UJ	R	0.22 U	98	183,309	2,052,021
2,4-Dimethylphenol	130 UJ	R	130 U	110 U	11 U	120 UJ	110 U	1.1 U	n.a.	n.a.	n.a.
2,4-Dinitrophenol	1,300 UJ	R	1,300 UJ	1,100 UJ	110 UJ	1,200 UJ	R	2.8 U	n.a.	n.a.	n.a.
2,4-Dinitrotoluene	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
2,6-Dinitrotoluene	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
2-Chloronaphthalene	26 UJ	170 J	25 U	22 U	2.2 U	24 UJ	22 U	0.033 U	n.a.	n.a.	n.a.
2-Chlorophenol	130 UJ	R	130 U	110 U	11 U	120 UJ	R	0.22 U	365	63,511	262,495
2-Methylnaphthalene	15,000	1,400	18,000	2,900	110	9,800	2,900	0.016 J	3,310	n.a.	n.a.
2-Methylphenol	130 UJ	R	130 U	110 U	11 U	120 UJ	R	0.22 U	n.a.	n.a.	n.a.
2-Nitroaniline	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
2-Nitrophenol	130 UJ	R	130 U	110 U	11 U	120 UJ	R	0.22 U	n.a.	n.a.	n.a.
3 & 4 Methylphenol	260 UJ	R	250 U	220 U	22 U	240 UJ	R	0.44 U	n.a.	n.a.	n.a.
3,3'-Dichlorobenzidine	260 UJ	2,200 U	250 U	220 U	22 U	240 UJ	220 U	1.1 U	n.a.	n.a.	n.a.
3-Nitroaniline	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
4,6-Dinitro-2-methylphenol	1,300 U	R	1,300 U	1,100 U	110 U	1,200 UJ	R	2.2 U	n.a.	n.a.	n.a.
4-Bromophenyl phenyl ether	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
4-Chloro-3-methylphenol	130 UJ	R	130 U	110 U	11 U	120 UJ	R	0.22 U	n.a.	n.a.	n.a.
4-Chloroaniline	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	126	244,412	2,736,028
4-Chlorophenyl phenyl ether	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
4-Nitroaniline	130 UJ	1,100 U	130 U	110 U	5.4 J	120 UJ	110 U	0.33 U	3.0	n.a.	n.a.
4-Nitrophenol	1,300 U	R	1,300 U	1,100 U	110 U	1,200 UJ	R	1.1 U	n.a.	n.a.	n.a.
Acenaphthene	26 UJ	900	25 U	350	10	24 UJ	620	0.055 U	52,264	3,683,396	32,502,818
Acenaphthylene	26 UJ	220 U	25 U	22 U	2.2 U	24 UJ	22 U	0.044 U	78,017	n.a.	n.a.
Anthracene	180 J	480	530	120	3.7	510 J	220	0.022 U	1,040,119	21,899,672	100,000,000
Benzo[a]anthracene	120 J	860	190	38	1.3 J	130 J	84	0.033 U	422	150	2,300
Benzo[a]pyrene	81 J	650	110	37	3.3 U	62 J	44	0.022 U	42	15	230
Benzo[b]fluoranthene	80 J	490	85	30	2.2 U	59 J	48	0.044 U	422	150	2,300
Benzo[g,h,i]perylene	85 J	480	61	29	2.7 U	43 J	37	0.033 U	1,177,982	n.a.	n.a.
Benzo[k]fluoranthene	32 UJ	280 U	31 U	28 U	2.7 U	10 J	9.8 J	0.033 U	4,218	1,500	23,000
Benzoic acid	3,200 UJ	R	3,100 U	2,800 U	270 U	3,000 UJ	R	1.1 U	77,150	100,000,000	100,000,000
Benzyl alcohol	130 UJ	R	130 U	110 U	11 U	120 UJ	R	0.015 J	n.a.	n.a.	n.a.
Bis(2-chloroethoxy)methane	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
Bis(2-chloroethyl)ether	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	0	211	616
Bis(2-chloroisopropyl) ether	190 UJ	1,700 U	190 U	170 U	16 U	180 UJ	160 U	0.22 U	n.a.	n.a.	n.a.
Bis(2-ethylhexyl) phthalate	1,900 UJ	17,000 U	1,900 U	1,700 U	160 U	1,800 UJ	1,600 U	1.7 U	11,836	35,000	140,000
Butyl benzyl phthalate	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.33 U	511,168	240,477	240,477
Carbazole	190 UJ	950 J	190 U	170 U	16 U	180 UJ	160 U	0.22 U	n.a.	n.a.	n.a.
Chrysene	290 J	1,400	370	53	1.7 J	180 J	120	0.022 U	33,366	14,762	234,414
Dibenz[a,h]anthracene	52 UJ	440 U	50 U	44 U	4.3 U	49 UJ	43 U	0.033 U	42	15	230
Dibenzofuran	130 UJ	200 J	130 U	110 U	11 U	120 UJ	110 U	0.22 U	6,099	145,284	1,737,888
Diethyl phthalate	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.06 J	27,531	49,000,000	100,000,000
Dimethyl phthalate	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.029 J	270,813	100,000,000	100,000,000
Di-n-butyl phthalate	260 UJ	2,200 U	250 U	220 U	22 U	240 UJ	220 U	0.22 U	30,989	n.a.	n.a.
Di-n-octyl phthalate	260 UJ	2,200 U	250 U	220 U	22 U	240 UJ	220 U	0.22 U	1,828,814	n.a.	n.a.
Fluoranthene	170 J	1,400	310	70	2.4	520 J	340	0.028 U	363,512	2,293,610	24,444,837
Fluorene	2,300 J	1,000	2,900	600	21	1,400 J	1,700	0.0076 J	54,836	2,644,486	26,221,983
Hexachlorobenzene	65 UJ	550 U	63 U	56 U	5.4 U	61 UJ	54 U	0.22 U	43	304	1,197
Hexachlorobutadiene	65 UJ	550 U	63 U	56 U	5.4 U	61 UJ	54 U	0.33 U	38	6,236	24,554
Hexachlorocyclopentadiene	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	1.1 U	12	365,487	4,065,241
Hexachloroethane	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.33 U	138	34,741	136,801
Indeno[1,2,3-cd]pyrene	52 UJ	440 U	50 U	44 U	4.3 U	43 J	43 U	0.033 U	422	150	7,800
Isophorone	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
Naphthalene	6,000 J	240	3,100	410	15	2,600 J	1,000	0.0079 J	1,144	124,798	208,984
Nitrobenzene	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
N-Nitrosodi-n-propylamine	130 UJ	1,100 U	130 U	110 U	11 U	120 UJ	110 U	0.22 U	n.a.	n.a.	n.a.
N-Nitrosodiphenylamine	65 UJ	550 U	63 U	56 U	5.4 U	61 UJ	54 U	0.22 U	0	99,261	390,861
Pentachlorophenol	130 UJ	R	130 U	110 U	11 U	120 UJ	R	0.39 U	9.1	2,979	9,998
Phenanthrene	3,600 J	3,300	4,400	960	37	4,600 J	2,500	0.0093 J	79,042	n.a.	n.a.
Phenol	130 UJ	R	130 U	110 U	11 U	120 UJ	R	0.33 U	7,358	18,331,473	100,000,000
Pyrene	510 J	3,200	690	140	4.7	770 J	430	0.033 U	359,215	2,308,756	31,979,385

Notes:

Italics indicates that the compound was not detected.

Bold type indicates that the compound exceeds the Idaho REM.

Underline type indicates that the compound exceeds the EPA Human Health Medium-Specific Screening Level for Residential Properties

Highlighted type indicates that the compound exceeds the EPA Human Health Medium-Specific Screening Level for Industrial Properties

(1) Idaho Risk Evaluation Manual (DEQ 2004).

(2) EPA Region 6 Human Health Medium-Specific Screening Levels (EPA 2007a).

Key:

ARAR =applicable or relevant and appropriate requirement

EPA =Environmental Protection Agency

ID = identification

J = estimated value

µg/kg = microgram per kilogram

µg/L = microgram per liter

n.a. =not available

R = rejected value

REM =Risk Evaluation Manual

SVOC = semivolatile organic compound

U = not detected (at the indicated reporting limit)

UJ = not detected (estimated reporting limit)

Table 4-4 Summary of PCB and NWTPH-Dx Results in Soil Samples Avery Landing Site Avery, Idaho											
Sample ID:	07040102	07040104	07040106	07040108	07040110	07040114	07040116	07040117	ARARs		
Sample Location:	EMW-01 SB 02	EMW-02 SB 07	EMW-03 SB 11	EMW-04 SB 03	EMW-05 SB 09	EMW-06 SB 09	ESB-01 SB 07	ESB-02 SB 03	Idaho REM Residential ⁽¹⁾	EPA Region 6 Residential ⁽²⁾	EPA Region 6 Industrial ⁽²⁾
PCBs (µg/kg)											
Aroclor-1016	11 U	12 U	13 U	10 U	13 U	13 U	11 U	11 U	2,334	3,933	23,606
Aroclor-1221	11 U	12 U	13 U	10 U	13 U	13 U	11 U	11 U	2.9	222	826
Aroclor-1232	11 U	12 U	13 U	10 U	13 U	13 U	11 U	11 U	n.a.	n.a.	n.a.
Aroclor-1242	11 U	12 U	13 U	10 U	13 U	13 U	11 U	11 U	3.2	222	826
Aroclor-1248	11 U	12 U	13 U	10 U	13 U	13 U	11 U	11 U	137	222	826
Aroclor-1254	11 U	12 U	13 U	10 U	13 U	13 U	11 U	11 U	740	222	826
Aroclor-1260	9.8 J	12 U	130	19	20 J	9.2 J	11 U	4.4 J	147	222	826
NWTPH-Dx (mg/kg)											
Sample ID:	07040102	07040105	07040106	07040108	07040110	07040114	07040116	07040117	ARARs		
Sample Location:	EMW-01 SB 02	EMW-02 SB 05	EMW-03 SB 11	EMW-04 SB 03	EMW-05 SB 09	EMW-06 SB 09	ESB-01 SB 07	ESB-02 SB 03	Idaho REM Residential ⁽¹⁾	EPA Region 6 Residential ⁽²⁾	EPA Region 6 Industrial ⁽²⁾
Diesel-Range Organics	1,500	7,200	40	160	12,000	6,900	650	Not Analyzed	n.a.	n.a.	n.a.
Oil-Range Organics	12,000	5,200	140 U	890	2,000	3,600	2,500	Not Analyzed	n.a.	n.a.	n.a.

Key is on last page.

Table 4-4 (continued) Summary of PCB and NWTPH-Dx Results in Soil Samples Avery Landing Site Avery, Idaho											
Sample ID:	07040119	07040120	07040122	07040124	07040125	07040127	07040129	07040111	ARARs		
Sample Location:	ESB-03 SB 11	ESB-04 SB 03	ESB-04 SB 07	ESB-05 SB 15	ESB-05 SB 23	ESB-06 SB 11	ESB-07 SB 13	RB-01 (Rinsate Blank)	Idaho REM Residential ⁽¹⁾	EPA Region 6 Residential ⁽²⁾	EPA Region 6 Industrial ⁽²⁾
PCBs (µg/kg)									(µg/L)		
Aroclor-1016	<i>13 U</i>	<i>10 U</i>	<i>13 U</i>	<i>11 U</i>	<i>10 U</i>	<i>12 U</i>	<i>11 U</i>	<i>0.055 UJ</i>	2,334	3,933	23,606
Aroclor-1221	<i>13 U</i>	<i>10 U</i>	<i>13 U</i>	<i>11 U</i>	<i>10 U</i>	<i>12 U</i>	<i>11 U</i>	<i>0.055 UJ</i>	2.9	222	826
Aroclor-1232	<i>13 U</i>	<i>10 U</i>	<i>13 U</i>	<i>11 U</i>	<i>10 U</i>	<i>12 U</i>	<i>11 U</i>	<i>0.055 UJ</i>	n.a.	n.a.	n.a.
Aroclor-1242	<i>13 U</i>	<i>10 U</i>	<i>13 U</i>	<i>11 U</i>	<i>10 U</i>	<i>12 U</i>	<i>11 U</i>	<i>0.055 UJ</i>	3.2	222	826
Aroclor-1248	<i>13 U</i>	<i>10 U</i>	<i>13 U</i>	<i>11 U</i>	<i>10 U</i>	<i>12 U</i>	<i>11 U</i>	<i>0.055 UJ</i>	137	222	826
Aroclor-1254	<i>13 U</i>	<i>10 U</i>	<i>13 U</i>	<i>11 U</i>	<i>10 U</i>	<i>12 U</i>	<i>11 U</i>	<i>0.055 UJ</i>	740	222	826
Aroclor-1260	<i>13 U</i>	22	<i>13 U</i>	<i>11 U</i>	<i>10 U</i>	6.8 J	6.5 J	<i>0.055 UJ</i>	147	222	826
NWTPH-Dx (mg/kg)									(µg/L)		
Sample ID:	07040119	07040120	07040122	07040124	07040125	07040127	07040129	07040111	ARARs		
Sample Location:	ESB-03 SB 11	ESB-04 SB 03	ESB-04 SB 07	ESB-05 SB 15	ESB-05 SB 23	ESB-06 SB 11	ESB-07 SB 13	RB-01	Idaho REM Residential ⁽¹⁾	EPA Region 6 Residential ⁽²⁾	EPA Region 6 Industrial ⁽²⁾
Diesel-Range Organics	17,000	3,700	13,000	3,100	Not Analyzed	7,800	6,600	<i>48 U</i>	n.a.	n.a.	n.a.
Oil-Range Organics	6,700	3,300	7,000	1,500	Not Analyzed	3,100	1,900	<i>190 U</i>	n.a.	n.a.	n.a.

Notes: Italics indicate Bold type indicates a detected compound.
 Bold type indicates that the compound exceeds the Idaho REM.
 Underline type indicates that the compound exceeds the EPA Human Health Medium-Specific Screening Level for Residential Properties
 Highlighted type indicates that the compound exceeds the EPA Human Health Medium-Specific Screening Level for Industrial Properties
 (1) Idaho Risk Evaluation Manual (DEQ 2004).
 (2) EPA Region 6 Medium-Specific Human Health Screening Levels (EPA 2007a).

Key:

- ARAR = applicable or relevant and appropriate requirement
- ID = identification
- J = estimated value
- µg/kg = microgram per kilogram
- µg/L = microgram per liter
- mg/kg = milligrams per kilogram
- NWTPH-Dx = Northwest Total Petroleum Hydrocarbon, Diesel Range Extended
- PCBs = polychlorinated biphenyls
- U = not detected (at the indicated reporting limit)
- UJ = not detected (estimated reporting limit)

Table 4-5

**Summary of TAL Metal Results in Soil Samples
Avery Landing Site
Avery, Idaho**

Sample ID:	07040102	07040105	07040106	07040108	07040110	07040113	07040116	07040117	ARARs		
Sample Location:	EMW-01 SB 02	EMW-02 SB 05	EMW-03 SB 11	EMW-04 SB 03	EMW-05 SB 09	EMW-06 SB 07	ESB-01 SB 07	ESB-02 SB 03	Idaho REM Residential (1)	EPA Region 6 Residential (2)	EPA Region 6 Industrial (3)
TAL Metals (mg/kg)											
Aluminum	11,200	19,500	14,900	11,200	13,500	15,800	14,100	12,100	n.a.	76,188	100,000
Antimony	0.2 <i>UJ</i>	0.074 J	0.1 J	1.3 J	0.21 J	0.12 J	0.17 J	1.1 J	4.8	31	450
Arsenic ⁽⁴⁾	17.3 J	8.6 J	7.3 J	12 J	5.7 J	7.5 J	15.7 J	16.9 J	0.39	0.39	1.8
Barium	63.2	113	92.8	193	76.3	96	125	174	896	16,000	100,000
Beryllium	0.4 J	0.67 J	0.47 J	0.62 J	0.57 J	0.54 J	0.46	0.46 J	1.6	150	2,200
Cadmium	0.47 J	0.52 J	0.45 J	0.81 J	0.39 J	0.43 J	0.53 J	0.78 J	1.4	39	560
Calcium	862 J	2,720 J	1,480 J	6,390 J	2,310 J	1,910 J	1,620 J	4,370 J	n.a.	n.a.	n.a.
Chromium	18.8	18.4	11.9	15.1	13.2	12.8	12.1	12.3	2,135 ⁽⁴⁾	210	500
Cobalt	8.8	8.4	6.2	6.5	6.9	8.5	7.1	19.2	n.a.	n.a.	n.a.
Copper	23.7	21.5	20.8	101	25.1	20.7	20.5	71.6	921	2,900	42,000
Iron	24,600	20,000	15,100	19,700	18,000	16,900	18,900	19,300	5.8	54,750	100,000
Lead	11	9.5	9.3	145	6.1	8.3	17.3	159	50	400	800
Magnesium	3,420 J	7,760 J	5,830 J	8,060 J	6,190 J	6,570 J	7,460 J	6,590 J	n.a.	n.a.	n.a.
Manganese	403 J	260 J	188 J	354 J	271 J	319 J	200 J	288 J	223	3,200	47,000
Mercury	0.0199 J	0.0124 J	0.0114 J	0.0553 J	0.0119 J	0.0105 J	0.0064 <i>UJ</i>	0.117	0.0051	23	340
Nickel	16.5	16.3	13.3	24.9	13.1	13.4	16.1	32.3	59	1,600	23,000
Potassium	1,600 J	2,940 J	1,980 J	3,250 J	2,460 J	1,720 J	3,500 J	2,740 J	n.a.	n.a.	n.a.
Selenium	0.13 J	0.28 J	0.36 J	0.22 J	0.38 J	0.39 J	0.23 J	0.21 J	2.0	390	5,700
Silver	0.14 J	0.15 J	0.11 J	0.16 J	0.1 J	0.11 J	0.12 J	0.17 J	0.19	390	5,700
Sodium	52.2 <i>U</i>	477	86.3 <i>U</i>	292	113 <i>U</i>	106 <i>U</i>	70.4 <i>U</i>	139 <i>U</i>	n.a.	n.a.	n.a.
Thallium	0.11 J	0.2 J	0.15 J	0.16 J	0.16 J	0.16 J	0.17 J	0.14 J	1.6	5.5	79
Vanadium	11.9	25.4	20.5	30.2	25.6	23	22.1	21.9	n.a.	n.a.	n.a.
Zinc	48.7	47.3	42.2	101	34.9	42.5	26	72.3	886	23,000	100,000

Key is at end of table.

Table 4-5 (continued)										
Summary of TAL Metal Results in Soil Samples Avery Landing Site Avery, Idaho										
Sample ID:	07040119	07040120	07040122	07040124	07040127	07040129	07040111	ARARs		
Sample Location:	ESB-03 SB 11	ESB-04 SB 03	ESB-04 SB 07	ESB-05 SB 15	ESB-06 SB 11	ESB-07 SB 13	RB-01 (Rinsate Blank)	Idaho REM Residential ⁽¹⁾	EPA Region 6 Residential ⁽²⁾	EPA Region 6 Industrial ⁽²⁾
TAL Metals (mg/kg)								(µg/L)		
Aluminum	13,100	10,200	13,000	11,100	12,700	7,760	32 <i>U</i>	n.a.	76,188	100,000
Antimony	0.099 J	0.49 J	0.063 J	0.059 J	0.07 J	0.066 J	0.626 <i>U</i>	4.8	31	450
Arsenic ⁽⁴⁾	<u>4.2 J</u>	<u>16.1 J</u>	<u>5.4 J</u>	<u>17 J</u>	<u>6.1 J</u>	<u>5.1 J</u>	0.1 <i>U</i>	0.39	0.39	1.8
Barium	65.6	175	65.8	62.4	69.2	44.3	0.4 <i>U</i>	896	16,000	100,000
Beryllium	0.46 J	0.42 J	0.49	0.4 J	0.39 J	0.24 J	0.043 <i>U</i>	1.6	150	2,200
Cadmium	0.36 J	0.86	0.36 J	0.29 J	0.41 J	0.23 J	0.094 <i>U</i>	1.4	39	560
Calcium	1,930 J	3,110 J	1,530 J	1,740 J	1,290 J	1,580 J	116 <i>U</i>	n.a.	n.a.	n.a.
Chromium	10.9	12	11.2	10.8	10.7	7.7	0.569 <i>U</i>	2,135 ⁽³⁾	210	500
Cobalt	5.5	6.3	7.1	7.9	6.9	5.6	0.028 <i>U</i>	n.a.	n.a.	n.a.
Copper	18.7	44.7	18.1	21.3	20.2	43	0.52 <i>U</i>	921	2,900	42,000
Iron	15,000	16,300	16,800	18,400	17,100	15,100	28.1 J	5.8	54,750	100,000
Lead	7.7	69.1	4.3	2.3	6.3	4.7	0.075 <i>U</i>	50	400	800
Magnesium	5,750 J	4,180 J	5,320 J	6,670 J	5,290 J	4,170 J	4.54 J	n.a.	n.a.	n.a.
Manganese	98.3 J	315 J	240 J	201 J	221 J	120 J	0.464 J	223	3,200	47,000
Mercury	0.00713 <i>UJ</i>	0.0312 J	0.00697 <i>UJ</i>	0.00625 <i>UJ</i>	0.00691 <i>UJ</i>	0.00609 <i>UJ</i>	0.018 <i>UJ</i>	0.0051	23	340
Nickel	12.9	17.8	12.9	15	12.1	8.7	0.11 <i>U</i>	59	1,600	23,000
Potassium	2,060 J	1,920 J	1,960 J	3,240 J	1,940 J	1,960 J	11 <i>U</i>	n.a.	n.a.	n.a.
Selenium	0.3 J	0.31 J	0.21 J	0.19 J	0.26 J	0.16 J	0.229 <i>UJ</i>	2.0	390	5,700
Silver	0.078 J	0.14 J	0.081 J	0.07 J	0.086 J	0.055 J	0.085 <i>U</i>	0.19	390	5,700
Sodium	89.5 <i>U</i>	203 <i>U</i>	101 <i>U</i>	89.7 <i>U</i>	89.5 <i>U</i>	108 <i>U</i>	203 J	n.a.	n.a.	n.a.
Thallium	0.13 J	0.12 J	0.16 J	0.26 J	0.15 J	0.094 J	0.044 <i>UJ</i>	1.6	5.5	79
Vanadium	23.5	29.9	22.3	19.5	21	28.3	0.116 J	n.a.	n.a.	n.a.
Zinc	34.4	111	29.5	18.4	33.4	20.7	1.87 J	886	23,000	100,000

Notes: Italics indicates the compound was not detected.

Bold type indicates the compound exceeds the Idaho REM guideline.

Underline type indicates the compound exceeds the EPA Region 6 residential guideline.

Highlighted type indicates the compound exceeds the EPA Region 6 industrial guideline.

(1) Idaho Risk Evaluation Manual (DEQ 2004).

(2) EPA Region 6 Medium-Specific Human Health Screening Levels (EPA 2007a).

(3) The Idaho REM standard for chromium is for chromium (III).

(4) The upper limit of background soil concentrations for arsenic in the nearby Coeur d'Alene and Spokane River basins is 22 mg/kg (URS Greiner 2001).

Key:

ARAR = applicable or relevant and appropriate requirement

ID = identification

J = estimated value

µg/L = microgram per liter

mg/kg = milligrams per kilogram

n.a. = not available

REM = Risk Evaluation Manual

TAL = target analyte list

U = not detected (at the indicated reporting limit)

UJ = not detected (estimated reporting limit)

<p align="center">Table 4-6</p> <p align="center">Summary of Volatile Organic Compound Results in Groundwater and Domestic Well Samples</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>												
Sample Number:	07040135	07040136	07040137	07040138	07040139	07040140	07040141	07040142	07040143	ARARs		
Sample Location:	EMW-01	EMW-02	EMW-03	EMW-04	EMW-05	EMW-06	HC-1R	MW-5	DW-01	Groundwater Standard (MCL) ⁽¹⁾	Idaho REM ⁽²⁾	EPA Region 6 Tap Water ⁽³⁾
VOCs (µg/L)												
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	200	200	836
1,1,2,2-Tetrachloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	0.3	0.3
1,1,2-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	5.0	1.2
1,1-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	1,040	1,217
1,1-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	7.0	7.0	340
1,2-Dichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	5.0	0.7
cis-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	70	70	61
trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	100	0.6	110
1,2-Dichloropropane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	5.0	1.0
cis-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	0.6	0.7
trans-1,3-Dichloropropene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	n.a.	0.7
2-Butanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	n.a.	6,260	7,100
2-Hexanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	n.a.	n.a.	n.a.
4-Methyl-2-pentanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	n.a.	n.a.	n.a.
Acetone	5.0 U	5.0 U	2.8 J	3.2 J	5.0 U	5.0 U	1.6 J	5.0 U	5.0 U	n.a.	9,390	5,475
Benzene	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	5.0	1.2
Bromodichloromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	0.9	1.1
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	100 ⁽⁴⁾	7.1	8.5
Bromomethane	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	n.a.	15	8.7
Carbon disulfide	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	1,040	1,043
Carbon tetrachloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	5.0	0.5
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.4	3.6	1.0 U	1.0 U	1.0 U	100 ⁽⁵⁾	100	91
Chloroethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	19	n.a.
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	100 ⁽⁴⁾	1.8	0.2
Chloromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	4.3	2.1
Dibromochloromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	n.a.	n.a.
Dichlorodifluoromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	2,090	395
Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	700	700	1,340
Methylene chloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	7.5	8.9
Styrene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	100	100	1,641
Tetrachloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	5.0	0.1
Toluene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1,000	1,000	2,281
Trichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0	5.0	0.2
Trichlorofluoromethane	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	n.a.	3,130	1,288
Vinyl chloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0	2.0	0.0
m,p-Xylene	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	10,000 ⁽⁶⁾	10,000 ⁽⁶⁾	200 ⁽⁶⁾
o-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10,000 ⁽⁶⁾	10,000 ⁽⁶⁾	200 ⁽⁶⁾

Note:

Italics indicates the compound was not detected.

Bold type indicates the compound exceeded the Idaho REM guideline.

Underline type indicates that the compound exceeds the groundwater standard (MCL).

Highlighted type indicates that the compound exceeds the EPA Region 6 tap water guideline.

(1) Groundwater Standards include the National Primary and Secondary Drinking Water Regulations, which include the federal MCLs (EPA 2003), and the state Primary and Secondary Constituent Standards for Groundwater (IDAPA 2006). Unless otherwise indicated, the state and federal standards are the same.

(2) Idaho Risk Evaluation Manual (DEQ 2004).

(3) EPA Region 6 Medium-Specific Human Health Screening Levels (EPA 2007a).

(4) The bromoform and chloroform standards are from the state regulations, only.

(5) The chlorobenzene standard is from the federal regulations, only.

(6) Xylene standards are for total xylene.

Key:

ARAR = applicable or relevant and appropriate requirement

ID = identification

J = estimated value

µg/L = microgram per liter

REM = Risk Evaluation Manual

U = not detected (at the indicated reporting limit)

UJ = not detected (estimated reporting limit)

Sample ID:	07040135	07040136	07040137	07040138	07040139	07040140	07040141	07040142	07040143	ARARs		
Sample Location:	EMW-01	EMW-02	EMW-03	EMW-04	EMW-05	EMW-06	HC-1R	MW-5	DW-01	Groundwater Standard (MCL) ⁽¹⁾	Idaho REM ⁽²⁾	EPA Region 6 Tap Water ⁽³⁾
SVOCs (µg/L)												
1,2,4-Trichlorobenzene	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	70	70	8.2
1,2-Dichlorobenzene	0.2 U	0.2 U	0.037 J	0.21 U	0.21	0.53 J	0.048 J	0.21 U	0.2 U	n.a.	600	49
1,3-Dichlorobenzene	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	9.4	14
1,4-Dichlorobenzene	0.2 U	0.2 U	0.2 U	0.21 U	0.051 J	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	75	2.8
1-Methylnaphthalene	0.0081 J	20	0.03 U	0.031 U	29	210	0.03 U	0.031 U	0.03 U	n.a.	n.a.	n.a.
2,4,5-Trichlorophenol	0.2 U	R	R	0.21 U	R	R	R	0.21 U	0.2 U	n.a.	n.a.	n.a.
2,4,6-Trichlorophenol	0.3 U	R	R	0.31 U	R	R	R	0.31 U	0.3 U	n.a.	n.a.	n.a.
2,4-Dichlorophenol	0.2 U	R	R	0.21 U	R	R	R	0.21 U	0.2 U	n.a.	31	110
2,4-Dimethylphenol	1.0 U	R	R	1.0 U	R	R	R	1.0 U	1.0 U	n.a.	n.a.	n.a.
2,4-Dinitrophenol	2.5 U	R	R	2.6 U	R	R	R	2.6 U	2.5 U	n.a.	n.a.	n.a.
2,4-Dinitrotoluene	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
2,6-Dinitrotoluene	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
2-Chloronaphthalene	0.03 U	0.029 U	0.03 U	0.031 U	0.03 U	0.28 U	0.03 U	0.031 U	0.03 U	n.a.	n.a.	n.a.
2-Chlorophenol	0.2 U	R	R	0.21 U	R	R	R	0.21 U	0.2 U	n.a.	52	30
2-Methylnaphthalene	0.0095 J	4.7	0.1 U	0.1 U	34	270	0.1 U	0.1 U	0.1 U	n.a.	42	n.a.
2-Methylphenol	0.2 U	R	R	0.21 U	R	R	R	0.21 U	0.2 U	n.a.	n.a.	n.a.
2-Nitroaniline	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
2-Nitrophenol	0.2 U	R	R	0.21 U	R	R	R	0.21 U	0.2 U	n.a.	n.a.	n.a.
3 & 4 Methylphenol	0.4 U	R	R	0.41 U	R	R	R	0.41 U	0.4 U	n.a.	n.a.	n.a.
3,3'-Dichlorobenzidine	1.0 U	0.98 U	1.0 U	1.0 U	1.0 U	9.5 U	1.0 U	1.0 U	1.0 U	n.a.	n.a.	n.a.
3-Nitroaniline	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
4,6-Dinitro-2-methylphenol	2 U	R	R	2.1 U	R	19 J	R	2.1 U	2.0 U	n.a.	n.a.	n.a.
4-Bromophenyl phenyl ether	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
4-Chloro-3-methylphenol	0.2 U	R	R	0.21 U	R	R	R	0.21 U	0.2 U	n.a.	n.a.	n.a.
4-Chloroaniline	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	42	146
4-Chlorophenyl phenyl ether	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
4-Nitroaniline	0.3 U	0.29 U	0.3 U	0.31 U	0.3 U	2.8 U	0.3 U	0.31 U	0.3 U	n.a.	1.5	n.a.
4-Nitrophenol	R	R	R	1.0 U	R	R	R	1.0 U	1.0 U	n.a.	n.a.	n.a.
Acenaphthene	0.015 J	2.4	0.11	0.17	2.9	9.3	0.6	0.052 U	0.05 U	n.a.	626	365
Acenaphthylene	0.04 U	0.039 U	0.041 U	0.041 U	0.04 U	0.38 U	0.04 U	0.041 U	0.04 U	n.a.	626	n.a.
Anthracene	0.02 U	0.73	0.012 J	0.021 U	0.12	4.4	0.019 J	0.021 U	0.0026 J	n.a.	3,130	1,825
Benzo[a]anthracene	0.03 U	0.37	0.03 U	0.017 J	0.03 U	1.6	0.03 U	0.031 U	0.03 U	n.a.	0.077	0.029
Benzo[a]pyrene	0.02 U	0.20	0.02 U	0.021 U	0.02 U	0.85	0.02 U	0.021 U	0.02 U	0.20	0.20	0.0029
Benzo[b]fluoranthene	0.04 U	0.12	0.041 U	0.038 J	0.04 U	0.84	0.04 U	0.041 U	0.04 U	n.a.	0.077	0.15
Benzo[g,h,i]perylene	0.03 U	0.11	0.03 U	0.037	0.03 U	0.51	0.03 U	0.031 U	0.03 U	n.a.	313	0.029
Benzo[k]fluoranthene	0.03 U	0.021 J	0.03 U	0.031 U	0.03 U	0.28 U	0.03 U	0.031 U	0.03 U	n.a.	0.77	1.5
Benzoic acid	1.0 U	R	R	1.0 U	R	R	R	1.0 U	1.0 U	n.a.	41,700	146,000
Benzyl alcohol	0.2 U	R	R	0.21 U	R	R	R	0.21 U	0.2 U	n.a.	n.a.	n.a.
Bis(2-chloroethoxy)methane	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
Bis(2-chloroethyl)ether	0.2 U	0.2 U	0.028 J	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	0.05	0.060
Bis(2-chloroisopropyl) ether	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
Bis(2-ethylhexyl) phthalate	16	1.5 U	120	85	390	14 U	210	71	1.5 U	6.0	6.0	4.8
Butyl benzyl phthalate	0.3 U	0.29 U	0.3 U	0.31 U	0.3 U	2.8 U	0.3 U	0.31 U	0.3 U	n.a.	2,090	7,300
Carbazole	0.2 U	0.48	0.2 U	0.022 J	0.13 J	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
Chrysene	0.02 U	0.51	0.02 U	0.067	0.02 U	3.0	0.02 U	0.021 U	0.02 U	n.a.	7.7	2.9
Dibenz[a,h]anthracene	0.03 U	0.029 U	0.03 U	0.031 U	0.03 U	0.28 U	0.03 U	0.031 U	0.03 U	n.a.	0.008	0.00
Dibenzofuran	0.2 U	0.2 U	0.2 U	0.02 J	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	42	12
Diethyl phthalate	0.014 J	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.018 J	n.a.	8,340	29,000
Dimethyl phthalate	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	104,000	370,000
Di-n-butyl phthalate	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	2.5	n.a.	1,040	n.a.
Di-n-octyl phthalate	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.08 J	0.21 U	0.2 U	n.a.	417	n.a.
Fluoranthene	0.0097 J	0.26	0.025 U	0.034	0.037	4.2	0.025 U	0.026 U	0.025 U	n.a.	417	1,460
Fluorene	0.0068 J	2.1	0.14	0.4	3.9	34	0.4	0.031 U	0.03 U	n.a.	417	243
Hexachlorobenzene	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	1.0	1.0	0.042
Hexachlorobutadiene	0.3 U	0.29 U	0.3 U	0.31 U	0.3 U	2.8 U	0.3 U	0.31 U	0.3 U	n.a.	1.0	0.86
Hexachlorocyclopentadiene	1.0 U	0.98 U	1.0 U	1.0 U	1.0 U	9.5 U	1.0 U	1.0 U	1.0 U	n.a.	50	219
Hexachloroethane	0.3 U	0.29 U	0.3 U	0.31 U	0.3 U	2.8 U	0.3 U	0.31 U	0.3 U	n.a.	4.0	4.8
Indeno[1,2,3-cd]pyrene	0.03 U	0.029 U	0.03 U	0.031 U	0.03 U	0.28 U	0.03 U	0.031 U	0.03 U	n.a.	0.077	0.029
Isophorone	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
Naphthalene	0.01 J	5.0	0.2 U	0.21 U	2.1	63	0.2 U	0.21 U	0.2 U	n.a.	209	6.2
Nitrobenzene	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
N-Nitrosodi-n-propylamine	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	1.9 U	0.2 U	0.21 U	0.2 U	n.a.	n.a.	n.a.
N-Nitrosodiphenylamine	0.2 U	0.2 U	0.2 U	0.21 U	0.2 U	12	0.2 U	0.21 U	0.2 U	n.a.	11	14
Pentachlorophenol	0.35 U	R	R	0.36 U	R	3.3 U	R	0.36 U	0.35 U	1.0	1.0	0.56
Phenanthrene	0.0046 J	4.0	0.021 J	0.078	2.3	59	0.026 J	0.041 U	0.04 U	n.a.	313	n.a.
Phenol	0.3 U	R	R	0.31 U	R	R	R	0.31 U	0.3 U	n.a.	3,130	10,950
Pyrene	0.015 J	1.2	0.03 U	0.071	0.041	8.6	0.03 U	0.031 U	0.03 U	n.a.	313	183

Notes: Italics indicates that the compound was not detected.

Bold type indicates that the compound exceeds the Idaho REM.

Underline type indicates that the compound exceeds the groundwater standard (MCL).

Highlighted type indicates that the compound exceeds the EPA Region 6 tap water guideline.

(1) Groundwater Standards include the National Primary and Secondary Drinking Water Regulations, which include the federal MCLs (EPA 2003), and the state Primary and Secondary Constituent Standards for Groundwater (IDAPA 2006). Unless otherwise indicated, the state and federal standards are the same.

(2) Idaho Risk Evaluation Manual (DEQ 2004).

(3) EPA Region 6 Medium-Specific Human Health Screening Levels (EPA 2007a).

Key:

ARAR = applicable or relevant and appropriate requirement
EPA = Environmental Protection Agency
ID = identification
J = estimated value
µg/L = microgram per liter
R = rejected value
REM = Risk Evaluation Memo
SVOC = semivolatile organic compound
U = not detected (at the indicated reporting limit)
UJ = not detected (estimated reporting limit)

Table 4-8

**Summary of PCB and NWTPH-Dx Results in Groundwater and Domestic Well Samples
Avery Landing Site
Avery, Idaho**

Sample ID:	07040135	07040136	07040137	07040138	07040139	07040140	07040141	07040142	07040143	ARARs		
Sample Location:	EMW-01	EMW-02	EMW-03	EMW-04	EMW-05	EMW-06	HC-1R	MW-5	DW-01	Groundwater Standard (MCL) ⁽¹⁾	Idaho REM ⁽²⁾	EPA Region 6 Tap Water ⁽³⁾
PCBs (µg/L)												
Aroclor-1016	<i>0.058 U</i>	<i>0.051 UJ</i>	<i>0.051 U</i>	<i>0.05 UJ</i>	<i>0.051 UJ</i>	<i>0.053 U</i>	<i>0.051 UJ</i>	<i>0.05 U</i>	<i>0.05 U</i>	0.5	0.73	0.96
Aroclor-1221	<i>0.058 U</i>	<i>0.051 UJ</i>	<i>0.051 U</i>	<i>0.05 UJ</i>	<i>0.051 UJ</i>	<i>0.053 U</i>	<i>0.051 UJ</i>	<i>0.05 U</i>	<i>0.05 U</i>	0.5	0.0279	0.0336
Aroclor-1232	<i>0.058 U</i>	<i>0.051 UJ</i>	<i>0.051 U</i>	<i>0.05 UJ</i>	<i>0.051 UJ</i>	<i>0.053 U</i>	<i>0.051 UJ</i>	<i>0.05 U</i>	<i>0.05 U</i>	0.5	n.a.	n.a.
Aroclor-1242	<i>0.058 U</i>	<i>0.051 UJ</i>	<i>0.051 U</i>	<i>0.05 UJ</i>	<i>0.051 UJ</i>	<i>0.053 U</i>	<i>0.051 UJ</i>	<i>0.05 U</i>	<i>0.05 U</i>	0.5	0.0279	0.0336
Aroclor-1248	<i>0.058 U</i>	<i>0.051 UJ</i>	<i>0.051 U</i>	<i>0.05 UJ</i>	<i>0.051 UJ</i>	<i>0.053 U</i>	<i>0.051 UJ</i>	<i>0.05 U</i>	<i>0.05 U</i>	0.5	0.0279	0.0336
Aroclor-1254	<i>0.058 U</i>	<i>0.051 UJ</i>	<i>0.051 U</i>	<i>0.05 UJ</i>	<i>0.051 UJ</i>	<i>0.053 U</i>	<i>0.051 UJ</i>	<i>0.05 U</i>	<i>0.05 U</i>	0.5	0.2090	0.0336
Aroclor-1260	<i>0.058 U</i>	<i>0.051 UJ</i>	<i>0.051 U</i>	<i>0.05 UJ</i>	<i>0.051 UJ</i>	0.028 J	<i>0.051 UJ</i>	<i>0.05 U</i>	<i>0.05 U</i>	0.5	0.0279	0.0336
NWTPH-Dx (µg/L)												
Sample ID:	07040135	07040136	07040137	07040138	07040139	07040140	07040141	07040142	07040143	ARARs		
Sample Location:	EMW-01	EMW-02	EMW-03	EMW-04	EMW-05	EMW-06	HC-1R	MW-5	DW-01	MCL ⁽¹⁾	Idaho REM ⁽²⁾	EPA Region 6 Tap Water ⁽³⁾
Diesel-Range Organics	83	5,500	780	3,900	2,000	110,000	1,300	<i>50 U</i>	79	n.a.	n.a.	n.a.
Oil-Range Organics	<i>210 U</i>	3,800	1,000	4,100	780	45,000	720	260	<i>190 U</i>	n.a.	n.a.	n.a.

Notes: Italics indicates that the compound was not detected.
 Bold type indicates that the compound exceeds the Idaho REM.
 Underline type indicates that the compound exceeds the groundwater standard (MCL).
 Highlighted type indicates that the compound exceeds the EPA Region 6 tap water guideline.
 (1) Groundwater Standards include the National Primary and Secondary Drinking Water Regulations, which include the federal MCLs (EPA 2003), and the state Primary and Secondary Constituent Standards for Groundwater (IDAPA 2006). Unless otherwise indicated, the state and federal standards are the same.
 (2) Idaho Risk Evaluation Manual (DEQ 2004).
 (3) EPA Region 6 Medium-Specific Human Health Screening Levels (EPA 2007a).

Key:

ARAR = applicable or relevant and appropriate requirement
 ID = identification
 J = estimated value
 µg/L = microgram per liter
 n.a. = not available
 NWTPH-Dx = Northwest Total Petroleum Hydrocarbon, Diesel Range Extended
 PCBs = polychlorinated biphenyls
 REM = Risk Evaluation Manual
 U = not detected (at the indicated reporting limit)
 UJ = not detected (estimated reporting limit)

Table 4-9												
Summary of TAL Metal Results in Groundwater and Domestic Well Samples Avery Landing Site Avery, Idaho												
Sample ID:	07040135	07040136	07040137	07040138	07040139	07040140	07040141	07040142	07040143	ARARs		
Sample Location:	EMW-01	EMW-02	EMW-03	EMW-04	EMW-05	EMW-06	HC-1R	MW-5	DW-01	Groundwater Standard (MCL) ⁽¹⁾	Idaho REM ⁽²⁾	EPA Region 6 Tap Water ⁽³⁾
TAL Metals (µg/L)												
Aluminum	32 <i>U</i>	<u>2,050</u>	74.9	121	634	<u>32,200</u>	32 <i>U</i>	79.7	32 <i>U</i>	200 ⁽⁴⁾	n.a.	36,500
Antimony	0.218 <i>UJ</i>	0.537 <i>U</i>	0.219 <i>UJ</i>	0.452 <i>U</i>	0.0949 <i>UJ</i>	1.87 <i>U</i>	0.465 <i>U</i>	0.222 <i>UJ</i>	0.0574 <i>U</i>	6.0	6.0	15
Arsenic	0.303 J	88.6	30.7	13.7	51.4	58.6	46.6	0.655 J	1.06	50 / 10 ⁽⁵⁾	10	0.045
Barium	12	61.1	84.4	113	72.1	305	109	9.3	21.1 J	2,000	2,000	7,300
Beryllium	0.043 <i>U</i>	0.106 J	0.043 <i>U</i>	0.043 <i>U</i>	0.043 <i>U</i>	1.84 J	0.043 <i>U</i>	0.043 <i>U</i>	0.043 <i>U</i>	4.0	4.0	73
Cadmium	0.094 <i>U</i>	0.142 J	0.094 <i>U</i>	0.094 <i>U</i>	0.094 <i>U</i>	1.07	0.094 <i>U</i>	0.094 <i>U</i>	0.094 <i>U</i>	5.0	5.0	18
Calcium	21,800	56,600	59,400	82,300	44,300	67,300	81,700	22,700	46,600	n.a.	n.a.	n.a.
Chromium	0.359 <i>U</i>	3.91	0.502 <i>U</i>	0.465 <i>U</i>	1.46	35.6	0.537 <i>U</i>	0.608 <i>U</i>	0.763 <i>U</i>	100	100	55,000 (6)
Cobalt	1.89	6.15	12.9	3.39	1.24	22.9	2.63	0.0826 J	0.0637 J	n.a.	n.a.	n.a.
Copper	0.52 <i>U</i>	8.43	0.52 <i>U</i>	0.689 J	2.35	132	0.52 <i>U</i>	0.746 J	1.41 J	1,300	1,300	1,400
Iron	82	26,100	30,800	31,300	23,000	80,500	50,600	183	141 J	300	3,130	25,550
Lead	0.075 <i>U</i>	2.17	0.105 J	0.615 J	0.583 J	39.8	0.075 <i>U</i>	0.178 J	0.075 <i>UJ</i>	15	15	15
Magnesium	6,370 J	8,280 J	7,660 J	14,000 J	7,760 J	26,400 J	9,900 J	6,460 J	13,200 J	n.a.	n.a.	n.a.
Manganese	<u>120</u>	3,300	5,510	3,430	2,980	3,920	5,630	0.946 J	2.87 J	50	250	1,700
Mercury	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.018 <i>UJ</i>	2.0	2.0	11
Nickel	1.31	6.05	5.8	3.51	2.53	37.8	3.55	0.902 J	1.5	n.a.	209	730
Potassium	1,040	2,950	3,150	4,160	2,070	8,130	2,680	808	1,510	n.a.	n.a.	n.a.
Selenium	0.11 <i>UJ</i>	0.289 <i>UJ</i>	0.123 <i>UJ</i>	0.11 <i>UJ</i>	0.268 <i>UJ</i>	1.18	0.272 <i>UJ</i>	0.115 <i>UJ</i>	0.11 <i>UJ</i>	50	50	180
Silver	0.085 <i>U</i>	0.085 <i>U</i>	0.085 <i>U</i>	0.085 <i>U</i>	0.085 <i>U</i>	0.532 J	0.085 <i>U</i>	0.085 <i>U</i>	0.085 <i>U</i>	100	52.1	180
Sodium	2,000 J	3,330 J	2,150 J	4,360 J	2,670 J	5,350 J	2,710 J	1,950 J	2,860	n.a.	n.a.	n.a.
Thallium	0.044 <i>UJ</i>	0.044 <i>UJ</i>	0.044 <i>UJ</i>	0.044 <i>UJ</i>	0.044 <i>UJ</i>	0.356 J	0.044 <i>UJ</i>	0.044 <i>UJ</i>	0.044 <i>U</i>	2.0	2.0	2.6
Vanadium	0.135 J	5.41	0.871 J	0.668 J	1.71 J	53.2	1.24 J	0.268 J	0.19 <i>U</i>	n.a.	n.a.	n.a.
Zinc	3.43 J	7.68 J	4.48 J	8.01 J	7.94 J	68.3 J	5.03 J	5.04 J	6.44 <i>UJ</i>	5,000	3130	11,000

Notes:

Italics indicates that the compound was not detected.

Bold type indicates that the compound exceeds the Idaho REM.

Underline type indicates that the compound exceeds the groundwater standard (MCL).

Highlighted type indicates that the compound exceeds the EPA Region 6 tap water guideline.

(1) Groundwater Standards include the National Primary and Secondary Drinking Water Regulations, which include the federal MCLs (EPA 2003), and the state Primary and Secondary Constituent Standards for Groundwater (IDAPA 2006).

Unless otherwise indicated, the standards are the same.

(2) Idaho Risk Evaluation Manual (DEQ 2004).

(3) EPA Region 6 Medium-Specific Human Health Screening Levels (EPA 2007a).

(4) For aluminum, the federal regulation specifies a range of 50 to 200 µg/L, and the state of Idaho has set the standard at 200 µg/L.

(5) For arsenic, the state standard is 50 µg/L, and the federal standard is 10 µg/L.

(6) Region 6 Tap Water value is for chromium (III)

Key:

ARARs = applicable or relevant and appropriate requirements

ID = identification

J = estimated value

µg/L = microgram per liter

n.a. = not available

TAL = target analyte list

U = not detected (at the indicated reporting limit)

UJ = not detected (estimated reporting limit)

Table 4-10

**Summary of Volatile Organic Compound Results in Surface Water Samples
Avery Landing Site
Avery, Idaho**

Sample Number:	7040132	7040133	7040134	7040130	ARARs	
					Idaho REM ⁽¹⁾	Federal AWQC ⁽²⁾
Sample Location:	SW-01	SW-02	SW-03	TB-01		
VOCs (µg/L)						
1,1,1-Trichloroethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	11
1,1,2,2-Tetrachloroethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	0.2	2,400
1,1,2-Trichloroethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	0.6	9,400
1,1-Dichloroethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
1,1-Dichloroethene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
1,2-Dichloroethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	0.4	20,000
cis-1,2-Dichloroethene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	11,600
trans-1,2-Dichloroethene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	11,600
1,2-Dichloropropane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
cis-1,3-Dichloropropene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
trans-1,3-Dichloropropene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
2-Butanone	<i>5.0 U</i>	<i>5.0 U</i>	<i>5.0 U</i>	<i>5.0 U</i>	n.a.	n.a.
2-Hexanone	<i>5.0 U</i>	<i>5.0 U</i>	<i>5.0 U</i>	<i>5.0 U</i>	n.a.	n.a.
4-Methyl-2-pentanone	<i>5.0 U</i>	<i>5.0 U</i>	<i>5.0 U</i>	<i>5.0 U</i>	n.a.	n.a.
Acetone	<i>5.0 U</i>	<i>5.0 U</i>	<i>5.0 U</i>	<i>5.0 U</i>	n.a.	n.a.
Benzene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	1.2	130
Bromodichloromethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
Bromoform	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	4.3	n.a.
Bromomethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 UJ</i>	n.a.	n.a.
Carbon disulfide	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
Carbon tetrachloride	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	0.3	9.8
Chlorobenzene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	680	50
Chloroethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
Chloroform	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	5.7	1,240
Chloromethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
Dibromochloromethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
Dichlorodifluoromethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	11,000
Ethylbenzene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	3,100	7.3
Methylene chloride	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	4.7	2,200
Styrene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
Tetrachloroethene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	840
Toluene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	6,800	9.8
Trichloroethene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	2.7	21,900
Trichlorofluoromethane	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	n.a.
Vinyl chloride	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	2.0	11,600
m,p-Xylene	<i>2.0 U</i>	<i>2.0 U</i>	<i>2.0 U</i>	<i>2.0 U</i>	n.a.	13 ⁽³⁾
o-Xylene	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	<i>1.0 U</i>	n.a.	13 ⁽³⁾

Note: Italics indicates the compound was not detected.
 Bold type indicates the compound exceeded the Idaho REM guideline.
 Underline type indicates the compound exceeded a federal guideline or standard.
 (1) Idaho Risk Evaluation Manual (DEQ 2004).
 (2) Ambient Water Quality Criteria (Buchman 1999).
 (3) Xylene standards are for total xylene.

Key:

ARAR = applicable or relevant and appropriate requirement
 AWQC = Ambient Water Quality Criteria
 ID = identification
 J = estimated value
 µg/L = microgram per liter
 U = not detected (at the indicated reporting limit)
 UJ = not detected (estimated reporting limit)

<p align="center">Table 4-11</p> <p align="center">Summary of Semivolatile Organic Compound Results in Surface Water Samples</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>					
Sample ID:	07040132	07040133	07040134	ARARs	
Sample Location:	SW-01	SW-02	SW-03	Idaho REM ⁽¹⁾	Federal AWQC ⁽²⁾
SVOCs (µg/L)					
1,2,4-Trichlorobenzene	0.19 U	0.19 U	0.19 U	960	50
1,2-Dichlorobenzene	0.19 U	0.19 U	0.19 U	2,700	n.a.
1,3-Dichlorobenzene	0.19 U	0.19 U	0.19 U	400	n.a.
1,4-Dichlorobenzene	0.19 U	0.19 U	0.19 U	400	763
1-Methylnaphthalene	0.029 U	0.041	0.34	n.a.	n.a.
2,4,5-Trichlorophenol	0.19 U	0.19 U	0.19 U	n.a.	n.a.
2,4,6-Trichlorophenol	0.29 U	0.29 U	0.29 U	n.a.	n.a.
2,4-Dichlorophenol	0.19 U	0.19 U	0.19 U	n.a.	365
2,4-Dimethylphenol	0.96 U	0.96 U	0.95 U	n.a.	n.a.
2,4-Dinitrophenol	2.4 U	2.4 U	2.4 U	n.a.	n.a.
2,4-Dinitrotoluene	0.19 U	0.19 U	0.19 U	n.a.	n.a.
2,6-Dinitrotoluene	0.19 U	0.19 U	0.19 U	n.a.	n.a.
2-Chloronaphthalene	0.029 U	0.029 U	0.029 U	n.a.	n.a.
2-Chlorophenol	0.19 U	0.19 U	0.19 U	n.a.	4,380
2-Methylnaphthalene	0.096 U	0.014 J	0.11	n.a.	n.a.
2-Methylphenol	0.19 U	0.19 U	0.19 U	n.a.	n.a.
2-Nitroaniline	0.19 U	0.19 U	0.19 U	n.a.	n.a.
2-Nitrophenol	0.19 U	0.19 U	0.19 U	n.a.	n.a.
3 & 4 Methylphenol	0.38 U	0.38 U	0.38 U	n.a.	n.a.
3,3'-Dichlorobenzidine	0.96 U	0.96 U	0.95 U	n.a.	n.a.
3-Nitroaniline	0.19 U	0.19 U	0.19 U	n.a.	n.a.
4,6-Dinitro-2-methylphenol	1.9 U	1.9 U	1.9 U	n.a.	n.a.
4-Bromophenyl phenyl ether	0.19 U	0.19 U	0.19 U	n.a.	n.a.
4-Chloro-3-methylphenol	0.19 U	0.19 U	0.19 U	n.a.	n.a.
4-Chloroaniline	0.19 U	0.19 U	0.19 U	n.a.	50
4-Chlorophenyl phenyl ether	0.19 U	0.19 U	0.19 U	n.a.	n.a.
4-Nitroaniline	0.29 U	0.29 U	0.29 U	n.a.	n.a.
4-Nitrophenol	0.96 U	0.96 U	0.95 U	n.a.	n.a.
Acenaphthene	0.048 U	0.025 J	0.084	n.a.	520
Acenaphthylene	0.038 U	0.038 U	0.038 U	n.a.	n.a.
Anthracene	0.019 U	0.0088 J	0.015 J	9,600	0.73
Benzo[a]anthracene	0.029 U	0.029 U	0.011 J	0.0028	n.a.
Benzo[a]pyrene	0.019 U	0.019 U	0.027	0.0028	0.014
Benzo[b]fluoranthene	0.038 U	0.038 U	0.023 J	0.0028	n.a.
Benzo[g,h,i]perylene	0.029 U	0.029 U	0.029 U	n.a.	n.a.
Benzo[k]fluoranthene	0.029 U	0.029 U	0.029 U	0.0028	n.a.
Benzoic acid	0.96 U	0.96 U	0.95 U	n.a.	42
Benzyl alcohol	0.19 U	0.19 U	0.013 J	n.a.	n.a.

Key is at end of table.

Table 4-11 (continued)					
Summary of Semivolatile Organic Compound Results in Surface Water Samples Avery Landing Site Avery, Idaho					
Sample ID:	07040132	07040133	07040134	ARARs	
Sample Location:	SW-01	SW-02	SW-03	Idaho REM ⁽¹⁾	Federal AWQC ⁽²⁾
SVOCs (µg/L)					
Bis(2-chloroethoxy)methane	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	n.a.	n.a.
Bis(2-chloroethyl)ether	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	0.031	n.a.
Bis(2-chloroisopropyl) ether	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	n.a.	n.a.
Bis(2-ethylhexyl) phthalate	<i>1.4 U</i>	<i>1.4 U</i>	<i>1.4 U</i>	1.8	360
Butyl benzyl phthalate	<i>0.29 U</i>	<i>0.29 U</i>	<i>0.29 U</i>	n.a.	3.0
Carbazole	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	n.a.	n.a.
Chrysene	<i>0.019 U</i>	<i>0.019 U</i>	0.016 J	0.0028	0.027
Dibenz[a,h]anthracene	<i>0.029 U</i>	<i>0.029 U</i>	<i>0.029 U</i>	0.0028	n.a.
Dibenzofuran	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	n.a.	0.0037
Diethyl phthalate	<i>0.19 U</i>	0.011 J	<i>0.19 U</i>	23,000	3.0
Dimethyl phthalate	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	313,000	3.0
Di-n-butyl phthalate	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	2,700	3.0
Di-n-octyl phthalate	<i>0.19 U</i>	<i>0.19 U</i>	0.073 J	n.a.	3.0
Fluoranthene	<i>0.024 U</i>	0.0095 J	0.013 J	300	3,980
Fluorene	<i>0.029 U</i>	0.047	0.2	1,300	3.9
Hexachlorobenzene	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	0.00075	3.68
Hexachlorobutadiene	<i>0.29 U</i>	<i>0.29 U</i>	<i>0.29 U</i>	0.44	9.3
Hexachlorocyclopentadiene	<i>0.96 U</i>	<i>0.96 U</i>	<i>0.95 U</i>	240	5.2
Hexachloroethane	<i>0.29 U</i>	<i>0.29 U</i>	<i>0.29 U</i>	1.9	540
Indeno[1,2,3-cd]pyrene	<i>0.029 U</i>	<i>0.029 U</i>	<i>0.029 U</i>	0.0028	n.a.
Isophorone	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	n.a.	n.a.
Naphthalene	<i>0.19 U</i>	<i>0.19 U</i>	0.032 J	n.a.	620
Nitrobenzene	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	n.a.	n.a.
N-Nitrosodi-n-propylamine	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	n.a.	n.a.
N-Nitrosodiphenylamine	<i>0.19 U</i>	<i>0.19 U</i>	<i>0.19 U</i>	5.0	n.a.
Pentachlorophenol	<i>0.33 U</i>	<i>0.34 U</i>	<i>0.33 U</i>	0.27	15
Phenanthrene	<i>0.038 U</i>	0.12	0.21	n.a.	6.3 (proposed)
Phenol	<i>0.29 U</i>	<i>0.29 U</i>	<i>0.29 U</i>	n.a.	2,560
Pyrene	<i>0.029 U</i>	0.025 J	0.046	960	n.a.

Notes: Italics indicates the compound was not detected.
 Bold indicates the compound exceeded the Idaho REM.
 Underlined text indicates the compound exceeded a federal standard.
 (1) Idaho Risk Evaluation Manual (DEQ 2004).
 (2) Ambient Water Quality Criteria (Buchman 1999).

Key:

ARAR = applicable or relevant and appropriate requirement
 AWQC = Ambient Water Quality Criteria
 ID = identification
 J = estimated value
 µg/L = microgram per liter
 REM = Risk Evaluation Manual
 SVOC = semivolatile organic compound
 U = not detected (at the indicated reporting limit)
 UJ = not detected (estimated reporting limit)

<p align="center">Table 4-12</p> <p align="center">Summary of PCBs and NWTPH-Dx Results in Surface Water Samples</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>					
Sample ID:	07040132	07040133	07040134	ARARs	
Sample Location:	SW-01	SW-02	SW-03	Idaho REM ⁽¹⁾	Federal AWQC ⁽²⁾
PCBs (µg/L)					
Aroclor-1016	<i>0.048 U</i>	<i>0.048 U</i>	<i>0.056 U</i>	n.a.	n.a.
Aroclor-1221	<i>0.048 U</i>	<i>0.048 U</i>	<i>0.056 U</i>	n.a.	n.a.
Aroclor-1232	<i>0.048 U</i>	<i>0.048 U</i>	<i>0.056 U</i>	n.a.	n.a.
Aroclor-1242	<i>0.048 U</i>	<i>0.048 U</i>	<i>0.056 U</i>	n.a.	n.a.
Aroclor-1248	<i>0.048 U</i>	<i>0.048 U</i>	<i>0.056 U</i>	n.a.	n.a.
Aroclor-1254	<i>0.048 U</i>	<i>0.048 U</i>	<i>0.056 U</i>	n.a.	n.a.
Aroclor-1260	<i>0.048 U</i>	<i>0.048 U</i>	<i>0.056 U</i>	n.a.	n.a.
NWTPH-Dx (µg/L)					
Sample ID:	07040132	07040133	07040134	ARARs	
Sample Location:	SW-01	SW-02	SW-03	Idaho REM ⁽¹⁾	Federal AWQC ⁽²⁾
Diesel-Range Organics	<i>48 U</i>	320	2,300	n.a.	n.a.
Oil-Range Organics	<i>190 U</i>	<i>190 U</i>	1,200	n.a.	n.a.

Notes:

Italics indicates the compound was not detected.

Bold indicates the compound exceeded the Idaho REM.

Underlined text indicates the compound exceeded a federal standard.

(1) Idaho Risk Evaluation Manual (DEQ 2004).

(2) Ambient Water Quality Criteria (Buchman 1999).

Key:

ARAR = applicable or relevant and appropriate requirement

AWQC = Ambient Water Quality Criteria

ID = identification

J = estimated value

µg/L = microgram per liter

n.a. =not available

NWTPH-Dx = Northwest Total Petroleum Hydrocarbon,
Diesel Range Extended

PCBs = polychlorinated biphenyls

U = not detected (at the indicated reporting limit)

UJ = not detected (estimated reporting limit)

<p align="center">Table 4-13</p> <p align="center">Summary of TAL Metal Results in Surface Waters Samples</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>					
Sample ID:	07040132	07040133	07040134	ARARs	
Sample Location:	SW-01	SW-02	SW-03	Idaho REM ⁽¹⁾	Federal AWQC ⁽²⁾
TAL Metals (µg/L)					
Aluminum	32 <i>U</i>	32 <i>U</i>	32 <i>U</i>	n.a.	n.a.
Antimony	0.203 <i>U</i>	0.0903 <i>U</i>	0.056 <i>U</i>	14	50 (proposed)
Arsenic	0.209 J	0.248 J	0.296 J	50	150
Barium	<u>4.76</u> J	<u>5.11</u> J	<u>4.71</u> J	n.a.	4.0
Beryllium	0.043 <i>U</i>	0.043 <i>U</i>	0.043 <i>U</i>	n.a.	5.3
Cadmium	0.094 <i>U</i>	0.094 <i>U</i>	0.094 <i>U</i>	1.0	0.25 H
Calcium	8,270	8,700	7,920	n.a.	n.a.
Chromium	0.364 <i>U</i>	0.326 <i>U</i>	0.263 <i>U</i>	178	74 H (3)
Cobalt	0.029 J	0.0327 J	0.028 <i>U</i>	n.a.	n.a.
Copper	0.52 <i>UJ</i>	0.52 <i>UJ</i>	0.52 <i>UJ</i>	11	9 H
Iron	53.2 J	53.6 J	48.7 J	n.a.	1000
Lead	0.075 <i>UJ</i>	0.075 <i>UJ</i>	0.075 <i>UJ</i>	2.5	2.5 H
Magnesium	1,830 J	1,930 J	1,770 J	n.a.	n.a.
Manganese	1.07 J	1.31 J	1.37 J	n.a.	120
Mercury	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.018 <i>UJ</i>	0.012	0.77
Nickel	0.364 <i>U</i>	0.32 <i>U</i>	0.282 <i>U</i>	157	52 H
Potassium	455	488	431	n.a.	n.a.
Selenium	0.11 <i>UJ</i>	0.11 <i>UJ</i>	0.11 <i>UJ</i>	5.0	5.0
Silver	0.085 <i>U</i>	0.085 <i>U</i>	0.085 <i>U</i>	3.4	1.6 H
Sodium	1,030	1,020	971	n.a.	n.a.
Thallium	0.044 <i>U</i>	0.044 <i>U</i>	0.044 <i>U</i>	1.7	40
Vanadium	0.173 <i>U</i>	0.231 <i>U</i>	0.342 <i>U</i>	n.a.	n.a.
Zinc	9.55 <i>UJ</i>	1.8 <i>UJ</i>	2.48 <i>UJ</i>	105	120 H

Notes:

- Italics indicates that the compound was not detected.
- Bold type indicates that the compound exceeds the Idaho REM.
- Underline type indicates that the compound exceeds the Federal AWQC.
- (1) Idaho Risk Evaluation Manual (DEQ 2004).
- (2) Ambient Water Quality Criteria (Buchman 1999).
- (3) Chromium value is for chromium (III).

Key:

- ARAR = applicable or relevant and appropriate requirement
- AWQC = Ambient Water Quality Criteria
- H = value is hardness dependent; a hardness of 100 mg/L is assumed.
- ID = identification
- J = estimated value
- mg/L = milligrams per liter
- µg/L = microgram per liter
- TAL = target analyte list
- U = not detected (at the indicated reporting limit)
- UJ = not detected (estimated reporting limit)

Table 4-14	
Summary of Volatile Organic Compound Results in Product Sample Avery Landing Site Avery, Idaho	
Sample Number:	7040131
Sample Location:	HC-4
VOCs (µg/L)	
1,1,1-Trichloroethane	2,000 <i>U</i>
1,1,2,2-Tetrachloroethane	2,000 <i>U</i>
1,1,2-Trichloroethane	2,000 <i>U</i>
1,1-Dichloroethane	2,000 <i>U</i>
1,1-Dichloroethene	2,000 <i>U</i>
1,2-Dichloroethane	2,000 <i>U</i>
cis-1,2-Dichloroethene	2,000 <i>U</i>
trans-1,2-Dichloroethene	2,000 <i>U</i>
1,2-Dichloropropane	2,000 <i>U</i>
cis-1,3-Dichloropropene	2,000 <i>U</i>
trans-1,3-Dichloropropene	2,000 <i>U</i>
2-Butanone	10,000 <i>U</i>
2-Hexanone	10,000 <i>U</i>
4-Methyl-2-pentanone	10,000 <i>U</i>
Acetone	10,000 <i>U</i>
Benzene	2,000 <i>U</i>
Bromodichloromethane	1,500 <i>J</i>
Bromoform	2,000 <i>U</i>
Bromomethane	2,000 <i>U</i>
Carbon disulfide	2,000 <i>U</i>
Carbon tetrachloride	2,000 <i>U</i>
Chlorobenzene	1,600 <i>J</i>
Chloroethane	2,000 <i>U</i>
Chloroform	2,000 <i>U</i>
Chloromethane	2,000 <i>U</i>
Dibromochloromethane	2,000 <i>U</i>
Dichlorodifluoromethane	2,000 <i>U</i>
Ethylbenzene	2,000 <i>U</i>
Methylene chloride	2,700
Styrene	2,000 <i>U</i>
Tetrachloroethene	2,000 <i>U</i>
Toluene	2,000 <i>U</i>
Trichloroethene	2,000 <i>U</i>
Trichlorofluoromethane	2,000 <i>U</i>
Vinyl chloride	2,000 <i>U</i>
m,p-Xylene	4,000 <i>U</i>
o-Xylene	2,000 <i>U</i>

Note: Italics indicates that the compound was not detected.

Key:

- ID = identification
- J = estimated value
- µg/L = microgram per liter
- U = not detected (at the indicated reporting limit)
- UJ = not detected (estimated reporting limit)

Table 4-15	
Summary of Semivolatile Organic Compound Results in Product Sample Avery Landing Site Avery, Idaho	
Sample ID:	07040131
Sample Location:	HC-4
SVOCs (µg/kg)	
1,2,4-Trichlorobenzene	43,000 U
1,2-Dichlorobenzene	43,000 U
1,3-Dichlorobenzene	43,000 U
1,4-Dichlorobenzene	43,000 U
1-Methylnaphthalene	1,700,000
2,4,5-Trichlorophenol	85,000 U
2,4,6-Trichlorophenol	130,000 U
2,4-Dichlorophenol	85,000 U
2,4-Dimethylphenol	85,000 U
2,4-Dinitrophenol	850,000 U
2,4-Dinitrotoluene	85,000 U
2,6-Dinitrotoluene	85,000 U
2-Chloronaphthalene	17,000 U
2-Chlorophenol	85,000 U
2-Methylnaphthalene	2,400,000
2-Methylphenol	85,000 U
2-Nitroaniline	85,000 U
2-Nitrophenol	85,000 U
3 & 4 Methylphenol	170,000 U
3,3'-Dichlorobenzidine	170,000 U
3-Nitroaniline	85,000 U
4,6-Dinitro-2-methylphenol	850,000 U
4-Bromophenyl phenyl ether	85,000 U
4-Chloro-3-methylphenol	85,000 U
4-Chloroaniline	85,000 U
4-Chlorophenyl phenyl ether	85,000 U
4-Nitroaniline	85,000 U
4-Nitrophenol	850,000 U
Acenaphthene	130,000
Acenaphthylene	17,000 U
Anthracene	63,000
Benzo[a]anthracene	17,000 J
Benzo[a]pyrene	24,000 J
Benzo[b]fluoranthene	21,000
Benzo[g,h,i]perylene	21,000 U
Benzo[k]fluoranthene	21,000 U
Benzoic acid	2,100,000 U

Key is on last page.

<p align="center">Table 4-15</p> <p align="center">Summary of Semivolatile Organic Compound Results in Product Sample</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>	
Sample ID:	07040131
Sample Location:	HC-4
SVOCs (µg/kg)	
Benzyl alcohol	85,000 <i>U</i>
Bis(2-chloroethoxy)methane	85,000 <i>U</i>
Bis(2-chloroethyl)ether	85,000 <i>U</i>
Bis(2-chloroisopropyl) ether	130,000 <i>U</i>
Bis(2-ethylhexyl) phthalate	1,300,000 <i>U</i>
Butyl benzyl phthalate	85,000 <i>U</i>
Carbazole	130,000 <i>UJ</i>
Chrysene	29,000
Dibenz[a,h]anthracene	34,000 <i>U</i>
Dibenzofuran	85,000 <i>U</i>
Diethyl phthalate	85,000 <i>U</i>
Dimethyl phthalate	85,000 <i>U</i>
Di-n-butyl phthalate	170,000 <i>U</i>
Di-n-octyl phthalate	170,000 <i>U</i>
Fluoranthene	37,000
Fluorene	360,000
Hexachlorobenzene	43,000 <i>U</i>
Hexachlorobutadiene	43,000 <i>U</i>
Hexachlorocyclopentadiene	85,000 <i>U</i>
Hexachloroethane	85,000 <i>U</i>
Indeno[1,2,3-cd]pyrene	34,000 <i>UJ</i>
Isophorone	85,000 <i>U</i>
Naphthalene	320,000
Nitrobenzene	85,000 <i>U</i>
N-Nitrosodi-n-propylamine	85,000 <i>U</i>
N-Nitrosodiphenylamine	43,000 <i>UJ</i>
Pentachlorophenol	85,000 <i>U</i>
Phenanthrene	700,000
Phenol	85,000 <i>U</i>
Pyrene	69,000

Note: Italics indicates that the compound was not detected.

Key:

- ID = identification
- J = estimated value
- µg/kg = microgram per kilogram
- SVOC = semivolatile organic compound
- U = not detected (at the indicated reporting limit)
- UJ = not detected (estimated reporting limit)

Table 4-16 Summary of PCB and NWTPH-Dx Results in Product Sample Avery Landing Site Avery, Idaho	
Sample ID:	07040131
Sample Location:	HC-4
PCBs (µg/kg)	
Aroclor-1016	<i>470 U</i>
Aroclor-1221	<i>470 U</i>
Aroclor-1232	<i>470 U</i>
Aroclor-1242	<i>470 U</i>
Aroclor-1248	<i>470 U</i>
Aroclor-1254	<i>470 U</i>
Aroclor-1260	330 J
NWTPH-Dx (mg/kg)	
Sample ID:	07040131
Sample Location:	HC-4
Diesel-Range Organics	1,100,000
Oil-Range Organics	260,000

Note: Italics indicates that the compound was not detected.

Key:

- ID = identification
- J = estimated value
- µg/kg = microgram per kilogram
- mg/kg = milligrams per kilogram
- NWTPH-Dx = Northwest Total Petroleum Hydrocarbon,
Diesel Range Extended
- PCBs = polychlorinated biphenyls
- U = not detected (at the indicated reporting limit)
- UJ = not detected (estimated reporting limit)

Table 4-17	
Summary of TAL Metals Results in Product Sample Avery Landing Site Avery, Idaho	
Sample ID:	07040131
Sample Location:	HC-4
TAL Metals (mg/kg)	
Aluminum	71.2
Antimony	0.28 J
Arsenic	3.1
Barium	2.3
Beryllium	<i>0.013 U</i>
Cadmium	0.061 J
Calcium	55.9 J
Chromium	3.4
Cobalt	0.38
Copper	10.9
Iron	35.9
Lead	1.6
Magnesium	<i>1.3 U</i>
Manganese	0.74 J
Mercury	<i>0.00546 U</i>
Nickel	21.8
Potassium	7.6 J
Selenium	0.23 J
Silver	0.038 J
Sodium	5.5 J
Thallium	<i>0.0091 U</i>
Vanadium	21.9
Zinc	<i>1.5 U</i>

Note: Italics indicates that the compound was not detected.

Key:

ID = identification

J = estimated value

mg/kg = milligrams per kilogram

TAL = target analyte list

U = not detected (at the indicated reporting limit)

Table 4-18						
Summary of Exceedences of Federal Action Levels in Soil						
Avery Landing Site						
Avery, Idaho						
Property	Sample ID	Benzo[a] anthracene	Benzo[a] pyrene	Benzo[b] fluoranthrene	Dibenz[a,h] anthracene	Arsenic ⁽¹⁾
		µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
EPA Region 6 HHMSSL - Residential Soil		150	15	150	15	0.39
Benticik	EMW-01	n.d.	n.d.	n.d.	n.d.	17.3 J
	EMW-02	n.e.	85	n.e.	n.d.	8.6 J
	EMW-06	n.e.	n.d.	n.d.	n.d.	7.5 J
	ESB-04	860 / 190	650 / 110	490	n.d.	16.1 J / 5.4 J
	ESB-05	n.e.	37	n.e.	n.d.	17 J
	ESB-06	n.e.	62 J	n.e.	n.d.	6.1 J
Potlatch	EMW-03	n.d.	n.d.	n.d.	n.d.	7.3 J
	EMW-04	n.e.	58	n.e.	n.e.	12 J
	EMW-05	210	110	n.e.	n.d.	5.7 J
	ESB-01	n.d.	n.d.	n.d.	n.d.	15.7 J
	ESB-02	n.e.	43	n.e.	40 J	16.9 J
	ESB-03	n.e.	81 J	n.e.	n.d.	4.2 J
	ESB-07	n.e.	44	n.e.	n.d.	5.1 J

Note: (1) The upper limit of background soil concentrations for arsenic in the nearby Coeur d'Alene and Spokane River basins is 22 mg/kg (URS Greiner 2001).

Key:

HHMSSL = Human Health Medium-Specific Screening Level

n.d. = not detected

n.e. = no exceedence of EPA HHMSSL.

Table 4-19

**Summary of Exceedences of State Action Levels in Soil
Avery Landing Site
Avery, Idaho**

		2-Methyl naphthalene	4-Nitro aniline	Benzo[a] anthracene	Benzo[a] pyrene	Benzo[b] fluoranthrene	Naphthalene	Arsenic ⁽¹⁾	Iron	Lead	Manganese	Mercury
Property	Sample ID	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Idaho Risk Evaluation Manual		3,310	3	422	42	422	1,144	0.39	5.8	50	223	0.0051
Bentcik	EMW-01	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	17.3 J	24,600	n.e.	403 J	0.0199 J
	EMW-02	n.e.	n.d.	n.e.	85	n.e.	n.e.	8.6 J	20,000	n.e.	260 J	0.0124 J
	EMW-06	44,000	n.d.	n.e.	n.d.	n.d.	4,700	7.5 J	16,900	n.e.	319 J	0.0105 J
	ESB-04	18,000	n.d.	860	650 / 110	490	3,100	16.1 J / 5.4 J	16,800 / 16,300	69.1	315 J / 240 J	0.0312 J
	ESB-05	n.e.	5.4 J	n.e.	37	n.e.	n.e.	17 J	18,400	n.e.	n.e.	n.d.
	ESB-06	9,800	n.d.	n.e.	62 J	n.e.	2,600 J	6.1 J	17,100	n.e.	n.e.	n.d.
Potlatch	EMW-03	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	7.3 J	15,100	n.e.	n.e.	0.0114 J
	EMW-04	n.e.	n.d.	n.e.	58	n.e.	n.e.	12 J	19,700	145	354 J	0.0553 J
	EMW-05	23,000	n.d.	n.e.	110	n.e.	3,600	5.7 J	18,000	n.e.	271 J	0.0119 J
	ESB-01	n.e.	n.d.	n.d.	n.d.	n.d.	n.d.	15.7 J	18,900	n.e.	n.e.	n.d.
	ESB-02	n.e.	n.d.	n.e.	43	n.e.	n.e.	16.9 J	19,300	159	288 J	0.117
	ESB-03	15,000	n.d.	n.e.	81 J	n.e.	6,000 J	4.2 J	15,000	n.e.	n.e.	n.d.
	ESB-07	n.e.	n.d.	n.e.	44	n.e.	n.e.	5.1 J	15,100	n.e.	n.e.	n.d.

Note: (1) The upper limit of background soil concentrations for arsenic in the nearby Coeur d'Alene and Spokane River basins is 22 mg/kg (URS Greiner 2001).

Key:

n.d. = not detected

n.e. = no exceedence of Idaho Risk Evaluation Manual

<p align="center">Table 4-20</p> <p align="center">Summary of Exceedences of Federal Action Levels in Water</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>												
Property	Sample ID	Benzo[a] anthracene ug/L	Benzo[a] pyrene ug/L	Benzo[b] fluoranthrene ug/L	Benzo[g,h,i] perylene ug/L	Chrysene ug/L	Naphthalene ug/L	Aluminum ug/L	Arsenic ug/L	Iron ug/L	Lead ug/L	Manganese ug/L
Groundwater												
Drinking Water Standard (MCL)		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	200 ⁽¹⁾	10 ⁽²⁾	300	15	50
EPA Region 6 HHMSSL - Tap Water		0.029	0.0029	0.15	0.029	2.9	6.2	36,500	0.045	25,550	15	1,700
Bentcik	EMW-01	n.d.	n.d.	n.d.	n.d.	n.d.	n.e.	n.d.	0.303 J	n.e.	n.d.	120
	EMW-02	0.37	0.20	n.e.	0.11	n.e.	n.e.	2,050	88.6	26,100	n.e.	3,300
	EMW-06	1.6	0.85	0.84	0.51	3.0	63	32,200	58.6	80,500	39.8	3,920
	MW-5	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.e.	0.655 J	n.e.	n.e.	n.e.
Potlatch	EMW-03	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.e.	30.7	30,800	n.e.	5,510
	EMW-04	n.e.	n.d.	n.e.	0.037	n.e.	n.d.	n.e.	13.7	31,300	n.e.	3,430
	EMW-05	n.d.	n.d.	n.d.	n.d.	n.d.	7.1	634	51.4	23,000	n.e.	2,980
	HC-1R	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	46.6	50,600	n.d.	5,630
	DW-01	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1.06	n.e.	n.d.	n.e.
Surface Water												
Federal AWQC		n.a.	0.014	n.a.	n.a.	n.a.	n.a.	n.a.	150	n.a.	2.5	120
Bentcik	SW-03	n.e.	0.027	n.e.	n.d.	n.e.	n.e.	n.d.	n.e.	n.e.	n.d.	n.e.

Notes: Bis(2-ethyl hexyl) phthalate is not included because it is a common laboratory contaminant and it was present in the background well.

Barium is not included for surface water because the concentrations exceeded the Federal AWQC in all three samples, including the upstream/background sample.

A bold sample result indicates that the sample exceeds both the MCL and the Region 6 tap water guideline.

(1) For aluminum, the federal regulation specifies a range of 50 to 200 µg/L, and the state of Idaho has set the standard at 200 µg/L.

(2) For arsenic, the state standard is 50 µg/L, and the federal standard is 10 µg/L.

Key:

AWQC = Ambient Water Quality Criteria

HHMSSL = Human Health Medium-Specific Screening Level

MCL = Maximum Contaminant Level

n.a. = not applicable

n.d. = not detected

n.e. = no exceedence of applicable standard or guideline

<p align="center">Table 4-21</p> <p align="center">Summary of Exceedences of State Action Levels in Water</p> <p align="center">Avery Landing Site</p> <p align="center">Avery, Idaho</p>													
Property	Sample ID	2-Methyl naphthalene ug/L	Benzo[a] anthracene ug/L	Benzo[a] pyrene ug/L	Benzo[a] fluoranthrene ug/L	Chrysene ug/L	N-Nitro sodiphenyl amine ug/L	Aluminum ug/L	Arsenic ug/L	Iron ug/L	Lead ug/L	Manganese ug/L	PCBs (Aroclor 1260) ug/L
Groundwater													
Groundwater Standard (MCL)		n.a.	n.a.	0.20	n.a.	n.a.	n.a.	200 ⁽¹⁾	50 ⁽²⁾	300	15	50	0.5
Idaho Risk Evaluation Manual		42	0.077	0.20	0.077	7.7	11	n.a.	10	3,130	15	250	0.0279
Bentcik	EMW-01	n.e.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.e.	n.e.	n.d.	n.e.	n.d.
	EMW-02	n.e.	0.37	0.20	0.12	n.e.	n.d.	2,050	88.6	26,100	n.e.	3,300	n.d.
	EMW-06	270	1.6	0.85	0.84	n.e.	12	32,200	58.6	80,500	39.8	3,920	0.028
	MW-5	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.e.	n.e.	n.e.	n.e.	n.e.	n.d.
Potlatch	EMW-03	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.e.	30.7	30,800	n.e.	5,510	n.d.
	EMW-04	n.d.	n.e.	n.d.	n.e.	n.e.	n.d.	n.e.	13.7	31,300	n.e.	3,430	n.d.
	EMW-05	n.e.	n.d.	n.d.	n.d.	n.d.	n.d.	634	51.4	23,000	n.e.	2,980	n.d.
	HC-1R	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	46.6	50,600	n.d.	5,630	n.d.
	DW-01	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.e.	n.e.	n.d.	n.e.	n.d.
Surface Water													
Idaho Risk Evaluation Manual		n.a.	0.0028	0.0028	0.0028	0.0028	n.a.	n.a.	50	n.a.	2.5	n.a.	n.a.
Bentcik	SW-03	n.d.	0.011 J	0.027	0.023 J	0.016 J	n.d.	n.d.	n.e.	n.e.	n.d.	n.e.	n.d.

Note: Bis(2-ethyl hexyl) phthalate is not included because it is a common laboratory contaminant and it was present in the background well.
 A bold sample result indicates that the sample exceeds both the groundwater standard and the Idaho Risk Evaluation Manual guideline.
 (1) For aluminum, the federal regulation specifies a range of 50 to 200 µg/L, and the state of Idaho has set the standard at 200 µg/L.
 (2) For arsenic, the state standard is 50 µg/L, and the federal standard is 10 µg/L.

Key:

n.a. = not applicable
 n.d. = not detected
 n.e. = no exceedence of Idaho Risk Evaluation Manual

Table 4-22									
Comparison of Soil Sample Results to Consensus-Based Sediment Threshold Effect Concentrations Avery Landing Site Avery, Idaho									
Sample ID:	07040102	07040104	07040106	07040108	07040110	07040114	07040116	07040117	Consensus-Based Sediment TEC ⁽¹⁾
Sample Location:	EMW-01 SB 02	EMW-02 SB 07	EMW-03 SB 11	EMW-04 SB 03	EMW-05 SB 09	EMW-06 SB 09	ESB-01 SB 07	ESB-02 SB 03	
PAHs (µg/kg)									
Anthracene	14 J	91	2.7 U	7.1 J	700	250	22 U	6.5 J	57.2
Benzo[a]anthracene	27 UJ	120	3.4 U	38 J	210	53	28 U	29	108
Benzo[a]pyrene	33 UJ	85	4.1 U	58	110	39 U	33 U	43	150
Chrysene	27 UJ	180	3.4 U	48	360	120	28 U	37	166
Dibenz[a,h]anthracene	44 UJ	47 U	5.5 U	36 J	50 U	53 U	45 U	40 J	33.0
Fluoranthene	26	65	2.7 U	61 J	460	99	22 U	33	423
Fluorene	22 U	180	9.7	22 U	2,800	4,900	22 U	22 U	77.4
Naphthalene	22 U	81	2.7 U	19 J	3,600	4,700	22 U	100	176
Phenanthrene	22 U	420	2.7 U	43	5,800	3,800	22 U	89	204
Pyrene	44	370	2.7 U	65	840	240	22 U	43	195
PCBs (µg/kg)									
Aroclor-1260	9.8 J	12 U	130	19	20 J	9.2 J	11 U	4.4 J	59.8 ⁽²⁾
TAL Metals (mg/kg)									
Sample ID:	07040102	07040105	07040106	07040108	07040110	07040113	07040116	07040117	Consensus-Based Sediment TEC ⁽¹⁾
Sample Location:	EMW-01 SB 02	EMW-02 SB 05	EMW-03 SB 11	EMW-04 SB 03	EMW-05 SB 09	EMW-06 SB 07	ESB-01 SB 07	ESB-02 SB 03	
Arsenic	17.3 J	8.6 J	7.3 J	12 J	5.7 J	7.5 J	15.7 J	16.9 J	9.79
Cadmium	0.47 J	0.52 J	0.45 J	0.81 J	0.39 J	0.43 J	0.53 J	0.78 J	0.99
Chromium	18.8	18.4	11.9	15.1	13.2	12.8	12.1	12.3	43.4
Copper	23.7	21.5	20.8	101	25.1	20.7	20.5	71.6	31.6
Lead	11	9.5	9.3	145	6.1	8.3	17.3	159	35.8
Mercury	0.0199 J	0.0124 J	0.0114 J	0.0553 J	0.0119 J	0.0105 J	0.0064 UJ	0.117	0.18
Nickel	16.5	16.3	13.3	24.9	13.1	13.4	16.1	32.3	22.7
Zinc	48.7	47.3	42.2	101	34.9	42.5	26	72.3	121

Key is on last page.

Table 4-22 (Continued)								
Comparison of Soil Sample Results to Consensus-Based Sediment Threshold Effect Concentrations Avery Landing Site Avery, Idaho								
Sample ID:	07040119	07040120	07040122	07040124	07040125	07040127	07040129	Consensus-Based Sediment TEC ⁽¹⁾
Sample Location:	ESB-03 SB 11	ESB-04 SB 03	ESB-04 SB 07	ESB-05 SB 15	ESB-05 SB 23	ESB-06 SB 11	ESB-07 SB 13	
PAHs (µg/kg)								
Anthracene	180 J	480	530	120	3.7	510 J	220	57.2
Benzo[a]anthracene	120 J	860	190	38	1.3 J	130 J	84	108
Benzo[a]pyrene	81 J	650	110	37	3.3 U	62 J	44	150
Chrysene	290 J	1,400	370	53	1.7 J	180 J	120	166
Dibenz(a,h)anthracene	52 UJ	440 U	50 U	44 U	4.3 U	49 UJ	43 U	33.0
Fluoranthene	170 J	1,400	310	70	2.4	520 J	340	423
Fluorene	2,300 J	1,000	2,900	600	21	1,400 J	1,700	77.4
Naphthalene	6,000 J	240	3,100	410	15	2,600 J	1,000	176
Phenanthrene	3,600 J	3,300	4,400	960	37	4,600 J	2,500	204
Pyrene	510 J	3,200	690	140	4.7	770 J	430	195
PCBs (µg/kg)								
Aroclor-1260	13 U	22	13 U	11 U	10 U	6.8 J	6.5 J	59.8 ⁽²⁾
TAL Metals (mg/kg)								
Sample ID:	07040119	07040120	07040122	07040124	07040125	07040127	07040129	Consensus-Based Sediment TEC ⁽¹⁾
Sample Location:	ESB-03 SB 11	ESB-04 SB 03	ESB-04 SB 07	ESB-05 SB 15	ESB-05 SB 23	ESB-06 SB 11	ESB-07 SB 13	
Arsenic	4.2 J	16.1 J	5.4 J	17 J	Not Analyzed	6.1 J	5.1 J	9.79
Cadmium	0.36 J	0.86	0.36 J	0.29 J	Not Analyzed	0.41 J	0.23 J	0.99
Chromium	10.9	12	11.2	10.8	Not Analyzed	10.7	7.7	43.4
Copper	18.7	44.7	18.1	21.3	Not Analyzed	20.2	43	31.6
Lead	7.7	69.1	4.3	2.3	Not Analyzed	6.3	4.7	35.8
Mercury	0.00713 UJ	0.0312 J	0.00697 UJ	0.00625 UJ	Not Analyzed	0.00691 UJ	0.00609 UJ	0.18
Nickel	12.9	17.8	12.9	15	Not Analyzed	12.1	8.7	22.7
Zinc	34.4	111	29.5	18.4	Not Analyzed	33.4	20.7	121

Notes: Italics indicates that the compound was not detected.

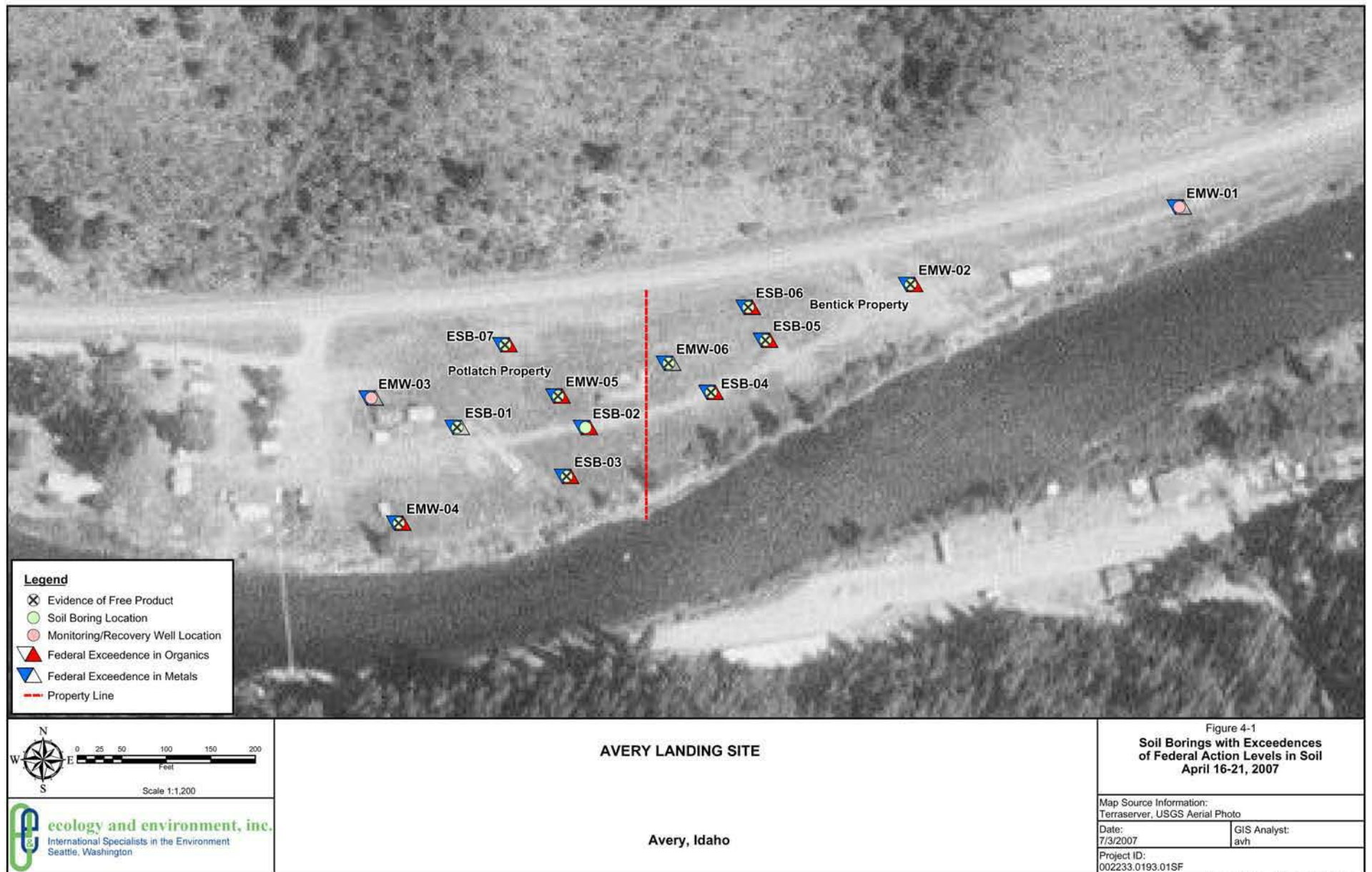
Bold type indicates that the compound exceeds the Sediment TEC.

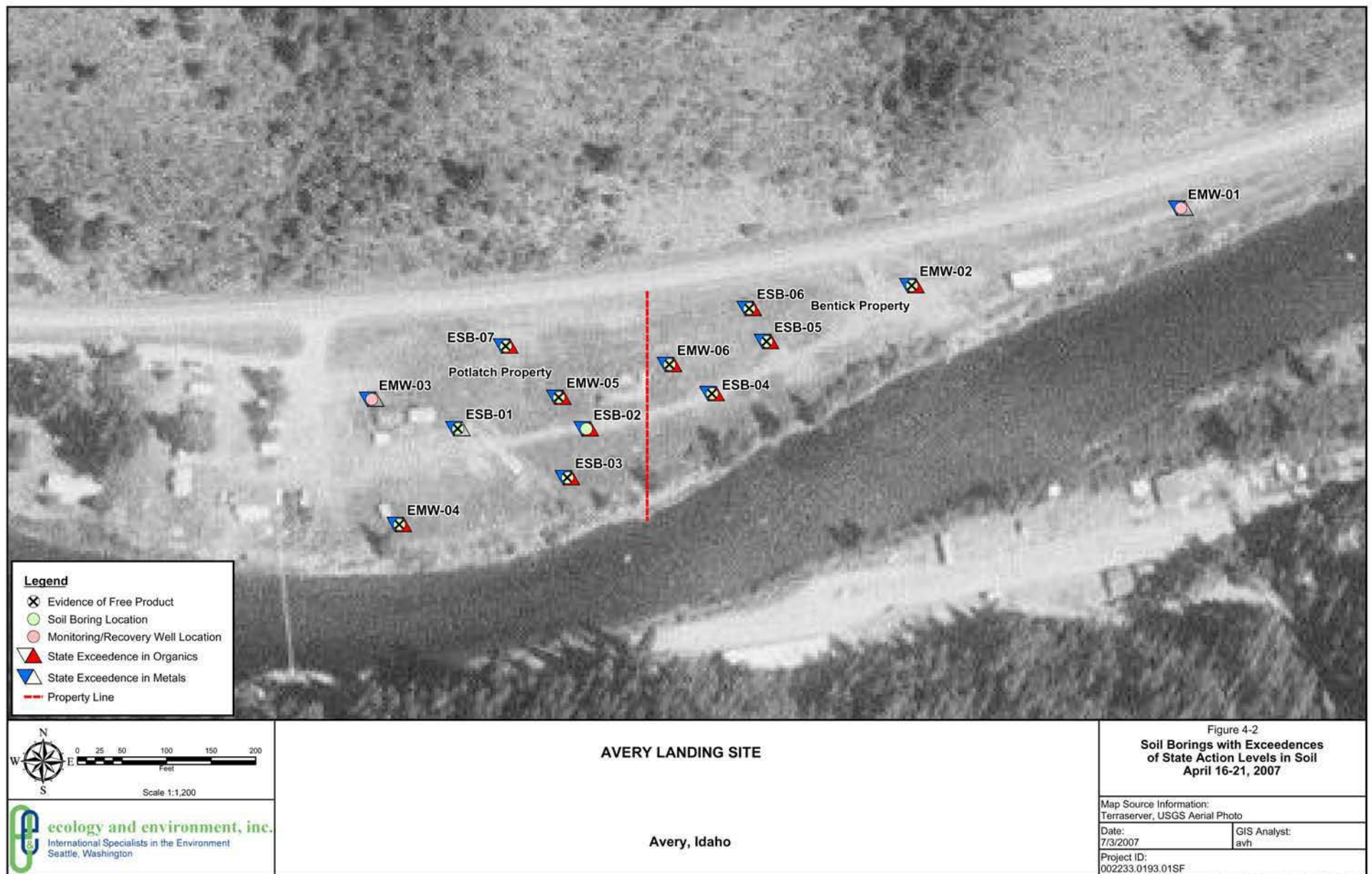
(1) Consensus-Based Sediment Threshold Effects Concentrations (MacDonald et al. 2000)

(2) The PCB Sediment TEC is for total PCBs.

Key:

- ID = identification
- J = estimated value
- µg/kg = microgram per kilogram
- PAH = polycyclic aromatic hydrocarbon
- TEC = Threshold Effects Concentration
- U = not detected (at the indicated reporting limit)
- UJ = not detected (estimated reporting limit)









5.0 QUALITY ASSURANCE / QUALITY CONTROL

Quality assurance / quality control (QA/QC) data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of sampling equipment, glassware and reagents. Specific QC requirements for laboratory analyses are incorporated in the Contract Laboratory Program Statement of Work for Inorganic Analyses (EPA 2007b) and the Contract Laboratory Program Statement of Work for Organic Analyses (EPA 2005). These QC requirements or equivalent requirements found in the analytical methods were followed for analytical work on the project. This section describes the QA/QC measures taken for the project and provides an evaluation of the usability of data presented in this report.

All samples were collected following the guidance of the SSSP (E & E 2007) for the field activities. Target analyte list (TAL) metals analyses following EPA SW-846 methods 6010, 6020, and 7471, total petroleum hydrocarbon extended diesel-range analyses following Washington Department of Ecology (Ecology) methods NWTPH-Dx, and semivolatile organic compound (SVOC) analyses following EPA SW-846 method 8270 were performed by Laucks Testing Laboratories, Inc., a commercial laboratory located in Seattle, Washington, and polychlorinated biphenyls (PCBs) analyses following EPA SW-846 method 8082 and volatile organic compound (VOC) analyses following EPA SW-846 method 8260 were performed by STL-Seattle, Inc., a commercial laboratory located in Tacoma, Washington.

Commercial laboratory data validation was conducted by a START chemist. Data qualifiers were applied as necessary according to the following guidance:

- USEPA (2004a) Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review.
- USEPA (2004b) Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.

In the absence of other QC guidance, method-specific QC limits were also utilized to apply qualifiers to the data.

5.1 SATISFACTION OF DATA QUALITY OBJECTIVES

The following EPA (EPA 2000) guidance document was used to establish data quality objectives (DQOs) for this project:

- Guidance for the Data Quality Objectives Process (EPA QA/G-4), EPA/600/R-96/055.

The OSC determined that definitive data without error and bias determination would be used for the sampling and analyses conducted during the field activities. The data quality achieved during the field work produced sufficient data that met the DQOs stated in the SSSP (E & E 2007). A detailed discussion of accomplished project objectives is presented in the following subsections.

5.2 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

QA samples included rinsate blank and trip blank samples. One rinsate blank sample and one trip blank sample were collected during the START field event, therefore meeting the frequency criteria of one rinsate blank sample per 20 samples collected using non-dedicated sampling equipment and one trip blank sample per VOC sample cooler. The rinsate blank is discussed in subsection 4.4.3 and the trip blank is discussed in subsection 4.4.4. QC samples included matrix spike (MS)/matrix spike duplicate (MSD) samples for organic analyses at a rate of one MS/MSD per 20 samples per matrix per analysis.

5.3 PROJECT-SPECIFIC DATA QUALITY OBJECTIVES

The commercial laboratory data were reviewed to ensure that DQOs for the project were met. The following describes the laboratories' ability to meet project DQOs for precision, accuracy and completeness and the field team's ability to meet project DQOs for representativeness and comparability. The laboratory and the field team were able to meet DQOs for the project.

5.3.1 Precision

Precision measures the reproducibility of the sampling and analytical methodology. Laboratory and field precision is defined as the relative percent difference (RPD) between duplicate sample analyses. The laboratory duplicate samples or MS/MSD samples measure the precision of the analytical method.

The RPD values were reviewed for all laboratory analyses. A total of 21 sample results (approximately 0.55% of the data) were qualified as estimated quantities (J or UJ) based on laboratory duplicate QC outliers. The DQO for precision of 85% was met.

5.3.2 Accuracy

Accuracy measures the reproducibility of the sampling and analytical methodology. Laboratory accuracy is defined as the surrogate spike or the MS percent recoveries. The surrogate percent recovery values were reviewed for all appropriate sample analyses. A total of 83 sample results (approximately 2.2% of the data) were qualified as estimated quantities (J or UJ) based on surrogate outliers. The MS percent recovery values were reviewed for all MS/MSD analyses. A total of 94 sample results

(approximately 2.5% of the data) were qualified as estimated quantities (J or UJ) based on matrix spike outliers. The project DQO for accuracy of 85% was met.

5.3.3 Completeness

Data completeness is defined as the percentage of usable data (usable data divided by the total possible data). All data were reviewed for usability. A total of 17 sample results (approximately 0.45% of the data) were rejected (R), therefore the project DQO for completeness of 90% was met.

5.3.4 Representativeness

Data representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point or environmental condition. The number and selection of samples were determined in the field to account accurately for site variations and sample matrices. The DQO for representativeness of 85% was met.

5.3.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Data produced for this site followed applicable field sampling techniques and specific analytical methodology. The DQO for comparability was met.

5.4 LABORATORY QUALITY ASSURANCE/QUALITY CONTROL PARAMETERS

The laboratory data also were reviewed for holding times/temperatures, laboratory method blank samples, rinsate blank samples, trip blank samples, and serial dilution analyses. These QA/QC parameters are summarized below. In general, the laboratory and field QA/QC parameters were considered acceptable.

5.4.1 Holding Times/Temperatures

All samples were maintained and received within QC temperature limits and all samples were analyzed within QC holding time limits.

5.4.2 Laboratory Blanks

The laboratory method blanks met the frequency criteria. The following potential contaminants of concern were detected in laboratory blanks and affected sample results:

SVOCs:	bis(2-ethylhexyl)phthalate, butylbenzyl phthalate, di-n-butyl phthalate;
TAL Metals:	antimony, calcium, chromium, lead, mercury, selenium, thallium; and
VOCs:	acetone, methylene chloride, and 4-methyl-2-pentanone.

Associated sample results less than 5 times the positive laboratory blank results (ten times for common contaminants) were qualified as not detected (U).

5.4.3 Rinsate Blanks

One rinsate blank sample was analyzed for each 20 samples collected using non-dedicated sampling equipment, meeting the frequency criteria. The following contaminants of concern were detected in the rinsate blank sample and resulted in sample qualifications:

SVOCs:	2-methylnaphthalene, dimethyl phthalate, diethyl phthalate, phenanthrene;
TAL Metals:	sodium; and
VOCs:	methylene chloride.

For rinsate blank results greater than the quantitation limits, sample results less than five times the rinsate blank concentration (10 times for common contaminants) were qualified as not detected (U).

5.4.4 Trip Blanks

One trip blank sample was collected during the START-3 field event, therefore meeting the frequency criteria of one trip blank sample per VOC sample cooler. The trip blank was collected from a distilled, deionized water source and was maintained with the sample containers. No contaminants of concern were detected in the trip blank sample.

5.4.5 Serial Dilution

A serial dilution analysis was performed for every 20 samples per matrix. A total of 42 sample results (approximately 1.1 % of the data) were qualified as estimated quantities (J or UJ) based on serial dilution outliers.

6.0 SUMMARY AND CONCLUSIONS

START-3 performed a removal assessment at the Avery Landing site in Avery, Idaho, to investigate the potential release of CERCLA hazardous substances and environmental impacts related to the site's past use as a railroad roundhouse, maintenance, and refueling facility. The site is located on the St. Joe River, which is designated a special resource water. The St. Joe River is an important resource for wildlife habitat and recreation, and it is also used for drinking water.

START-3 performed a field sampling event to observe site conditions and to collect representative samples of various media for analytical testing. During the field sampling event, a licensed driller installed 13 soil borings, of which six were completed as monitoring wells. START-3 collected a total of 43 environmental samples of subsurface soil, groundwater (including one domestic well), surface water, and product, and the samples were analyzed for VOCs, SVOCs, PCBs, NWTPH-Dx, and TAL metals. The investigation did not address the entire site; no drilling was performed to the west of monitoring well HC-1R, where the seasonal and permanent residents live, because of concerns about underground utility lines and septic tanks.

During the field sampling event, START-3 observed free petroleum product throughout the site at levels that exceeded applicable state regulatory standards. Free product was observed floating on the groundwater in monitoring and recovery wells, saturated in subsurface soils collected from soil borings, and seeping from the site into the St. Joe River. In two monitoring wells (HC-4 and TP-2), the product layer was nearly a foot thick (0.88 and 0.72 feet, respectively). In other wells, product was present but the thickness could not be determined because it was too sticky and viscous. Historic documents indicate that free product released at the site was a mixture of diesel fuel and heavy oil (bunker C), and the results of analytical testing confirmed the presence of both diesel and heavy oil. The estimated area of the free product plume has grown since 2000, especially toward the west and southwest, which is downgradient of the source area.

START-3 observed a 200-foot stretch of the site's river bank that contained evidence of past product seep activity, including the presence of oil on riprap at the water level. START-3 also observed several areas of active seeps within this zone, in which free product was seeping from underneath the riprap at the bank and floating to the surface.

Site subsurface soils were determined to contain a significant amount of silt, and the newly installed monitoring wells recharged slowly during well development. These observations indicate that groundwater at the site may flow relatively slowly compared to flow rates expected for a subsurface geology composed of pure sand. It is clear that the free product plume is moving through the subsurface formation, as product continues to seep to the river and the estimated area has grown downgradient to the

west and southwest. However, it also seems that much of the remaining free product has remained in the source area, which may be attributed to the relatively lower transmissivity of the silty-sand formation and the lack of sufficient hydraulic pressure from groundwater and rain to flush out the product.

The results of the analytical testing indicated that organic and inorganic CERCLA hazardous substances were detected in most of the site samples. Particularly, many PAH compounds were present in subsurface soil and groundwater samples at concentrations that exceeded applicable state and federal risk-based guidelines. The source of the PAH contamination is likely the petroleum product that is present throughout the site, and it has been documented that the petroleum product was released to soils and groundwater through the site's historic use as a railroad maintenance and refueling facility.

The PCB Aroclor-1260 was detected in several site soil samples and in a sample of the petroleum product, and Aroclor-1260 exceeded the state guideline in one groundwater sample. Aroclor-1260 may be present because the railroad facility serviced electric locomotives, and it was believed that transformer oils were used and stored in the facility.

Several metals were also present at concentrations above applicable guidelines. Arsenic, iron, lead, and manganese exceeded state guidelines in soil and state and federal guidelines in groundwater, and mercury exceeded the state soil guidelines. It is not clear if the metals contamination is present because of site activities. In northern Idaho, many of these metals occur naturally at elevated background concentrations, and many of the metals detected at the Avery Landing Site were present at similar concentrations in many site samples (e.g., arsenic, iron, and manganese in groundwater; and arsenic and iron in soil). However, the lead and mercury samples that exceeded ARARs were detected in a limited number of samples, which may be more indicative of a site-related source. For example, the highest detections of lead and mercury in soil occurred in soil boring ESB-02, which was advanced in the approximate vicinity of the facility's former machine shop. Additionally, the single detection of lead in groundwater that exceeded state and federal ARARs was in monitoring well EMW-06, which was located in the middle of the product-contaminated area.

The upgradient/background well EMW-01 contained trace levels of some VOCs, some PAHs, and Aroclor-1260 in soil. It also contained DRO at a concentration of 1,500 mg/kg and ORO at a concentration of 12,000 mg/kg, which was the highest concentration of ORO detected in soil. The groundwater from this sample also contained trace levels of PAHs and DROs. For metals, the soil sample from EMW-01 contained elevated levels of arsenic, while the groundwater sample contained lower concentrations of some metals than many of the downgradient site samples. In general, these results indicate that historic site activities may have extended as far to the east as EMW-01.

Most of the organic contaminants detected at the site, and the corresponding exceedences of ARARs, were PAHs that are usually associated with petroleum. There were also a few detections of

chlorinated VOCs and SVOCs in soil and groundwater, although none of them exceeded applicable ARARs. Trace levels of the VOC chlorobenzene were detected in soil (EMW-06, ESB-04, and ESB-05), groundwater (EMW-05 and EMW-06), and the product sample (HC-4). Additionally, trace levels of the SVOCs 1,2-dichlorobenzene and 1,4-dichlorobenzene were detected in groundwater. The presence of VOC chlorobenzene and other chlorinated compounds suggests that chlorinated solvents may have been used in the past at the site, and the relatively low concentrations may be a result of the time that has elapsed since their release and/or their volatility and mobility.

The on-site domestic well (DW-01) is downgradient of the site and the petroleum product source area. The domestic well is reportedly screened in a lower aquifer than the groundwater that was sampled on site, but it contained concentrations of site contaminants. Groundwater from the domestic well contained the PAH anthracene (0.0026 µg/L) and DRO (79 µg/L) at relatively low concentrations, and it also contained arsenic at a concentration (1.06 µg/L) above the EPA Region 6 HHMSSL for tap water (0.045 µg/L). While the arsenic may be naturally occurring, the presence of the anthracene and the DRO in the samples suggest that the contaminant plume at the site has the potential to impact the domestic well.

In addition to the visible petroleum product seeps to the river, surface water sample SW-03 contained four PAHs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and chrysene) at concentrations that exceeded Idaho REM guidelines. Benzo[a]pyrene also exceeded the federal AWQC. When compared to sediment guidelines, PAH compounds detected in the soil samples exceeded several consensus-based SQGs.

The results of the removal assessment indicate that there is a large zone of free petroleum product contamination on the groundwater and in subsurface soils at the site at levels that exceed state of Idaho regulatory standards. The petroleum product contains PCBs and other chlorinated compounds, and it is actively seeping to the St. Joe River. Subsurface soil and groundwater samples collected from the site contained several CERCLA hazardous substances (PAHs and metals) that exceeded applicable state and federal guidelines, and a surface water sample also contained PAHs in excess of state and federal guidelines. As long as the petroleum product remains at the site, it will be a continued source for the release of petroleum hydrocarbons to the river and to the domestic well located on site, and it will continue to have a potentially negative impact to surface and groundwater quality in the area.

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Appendix A
Photographic Documentation

AVERY LANDING SITE
Avery, Idaho



Photo 1 Eastern portion of the site, with AST in foreground and Benticik cabin in background.

Direction: East Date: 4/17/07 Taken by: JC



Photo 3 Bank of St. Joe River with boom around seep area.

Direction: Southeast Date: 10/26/06 Taken by: SH

Taken by: Steve Hall (SH), Josie Clark (JC), Earl Liverman (EL)



Photo 2 Western portion of the site, with remnants of railroad roundhouse and residences.

Direction: West Date: 4/17/07 Taken by: JC



Photo 4 View of the St. Joe River and boom along the on-site bank.

Direction: East Date: 10/26/06 Taken by: SH

AVERY LANDING SITE
Avery, Idaho

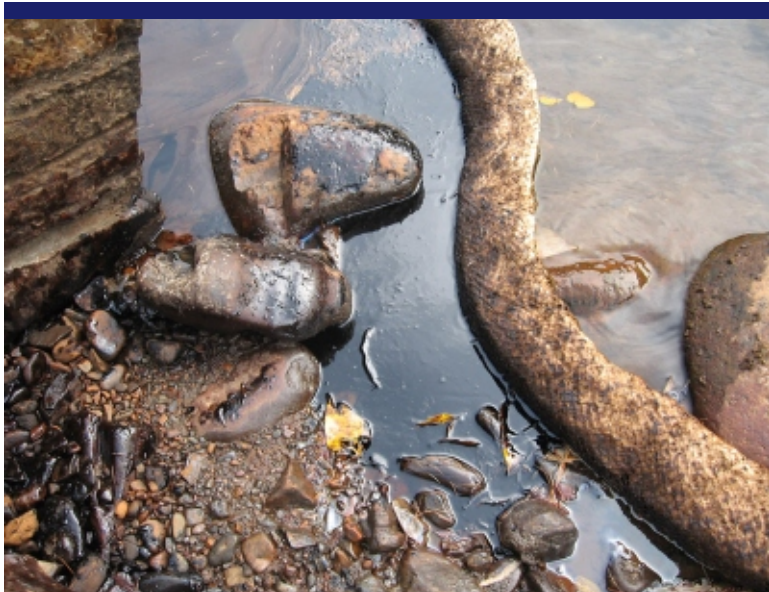


Photo 5 Close-up of petroleum product on rocks and surface water.

Direction: Down

Date: 10/26/06

Taken by: SH

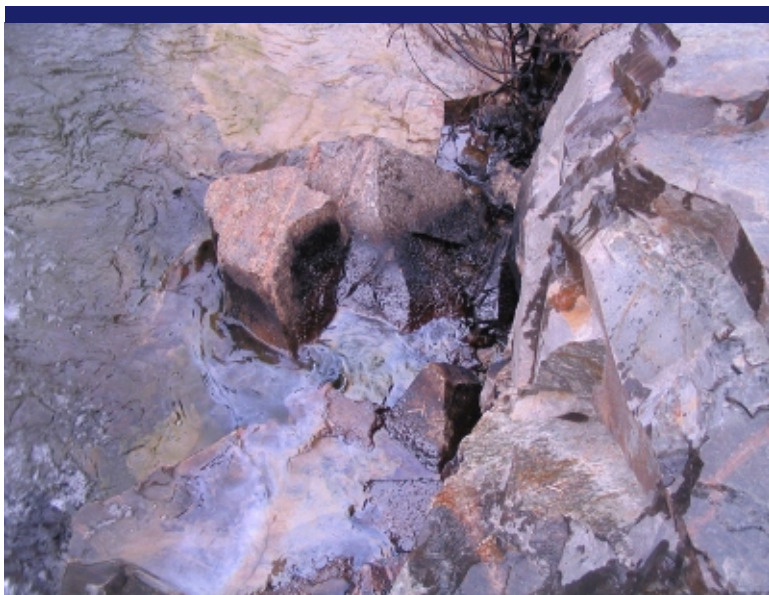


Photo 7 Close-up of petroleum product on rocks and sheen in water.

Direction: Down

Date: 4/20/07

Taken by: JC

Taken by: Steve Hall (SH), Josie Clark (JC), Earl Liverman (EL)



Photo 6 Close-up of sheen on surface water.

Direction: Southwest

Date: 10/26/06

Taken by: SH



Photo 8 Close-up of petroleum products on rocks and vegetation.

Direction: Down

Date: 4/20/07

Taken by: SH

AVERY LANDING SITE
Avery, Idaho



Photo 9 Driller at location of monitoring well EMW-06.

Direction: Southwest Date: 4/18/07 Taken by: JC

Taken by: Steve Hall (SH), Josie Clark (JC), Earl Liverman (EL)



Photo 10 Drillers advance soil boring ESB-05.

Direction: Northeast Date: 4/19/07 Taken by: JC



Photo 11 Construction of monitoring well vault for EMW-02.

Direction: Down Date: 4/17/07 Taken by: JC



Photo 12 Completion of monitoring well vault for EMW-02.

Direction: Down Date: 4/17/07 Taken by: JC

AVERY LANDING SITE
Avery, Idaho



Photo 13 START-3 collects analytical samples from soil core.

Direction: West

Date: 4/17/07

Taken by: SH



Photo 15 START-3 collects a sample of product from monitoring well HC-4.

Direction: East

Date: 4/20/07

Taken by: EL

Taken by: Steve Hall (SH), Josie Clark (JC), Earl Liverman (EL)



Photo 14 Petroleum product on oil/water interface probe at monitoring well HC-4.

Direction: West

Date: 4/17/07

Taken by: SH

AVERY LANDING SITE
Avery, Idaho



Photo 16 START-3 collects a surface water sample from St. Joe River at SW-03 location.

Direction: Down Date: 4/20/07 Taken by: JC

Taken by: Steve Hall (SH), Josie Clark (JC), Earl Liverman (EL)



Photo 17 START-3 collects a sample from the domestic well on the Potlatch property.

Direction: Northwest Date: 4/21/07 Taken by: SH



Photo 18 START-3 prepares samples to send to the analytical laboratory.

Direction: West Date: 4/21/07 Taken by: JC

Appendix B
Drilling Logs

DRILLING LOG OF WELL/BORING NO. EMW 01

Page 1 of 1

DATE DRILLED: 4/16/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: Arbitrary Site Datum
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation 97.81 ft	Heavy Gauged Steel Protective Casing			ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1	2" PVC Cement			Not Sampled				
2	Hydrated Bentonite chips			2.0				
3	20-slot V-wire screen		FILL	WELL GRADED SAND WITH GRAVEL. Moderate brown, dry, medium dense, fine to medium grained, with fractured fine to coarse gravel.		20 48 23 25	1.2	
4	10/20 Filter sand			4.0				
5			FILL	POORLY GRADED SAND WITH GRAVEL AND SILT. Moderate brown with flecks of red, black, and tan, dry, dense, fine grained sand with lesser coarse sand. Fractured fine to coarse gravel with moist silt.		15 10 8 7	1.0	
6				6.0				
7			FILL	POORLY GRADED SAND WITH GRAVEL AND SILT. Moderate brown, dry to moist (at 7.5'), dense, fine to medium grained sand, with fractured fine to medium gravel.		5 6 7 8	0.5	
8				8.0				
9				Not Sampled				
10				10.0				
11				Not Sampled				
12				12.0				
13				12.6				
14								
15								

ENE START WELL LOG B (AVERY) START_AVERY 1.GPJ E&E PORTLAND.GDT 7/31/07



ecology and environment, inc.

PROJECT NAME: Avery Landing
 WELL NO.: EMW 01

DRILLING LOG OF WELL/BORING NO. EMW 02

Page 1 of 1

DATE DRILLED: 4/17/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: Arbitrary Site Datum
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation 97.52 ft	Heavy Gauged Steel Protective Casing			ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1	2" PVC Cement Hydrated Bentonite Chips			Not Sampled				
2								
3								
4								
5	10/20 Filter Sand		FILL	3.0 WELL GRADED SAND WITH GRAVEL. Moderate brown, dry, medium dense, fine to coarse grained with fractured fine to coarse angular gravel and some silt.		15 15 9 12	1.3	
6	20-slot V-wire screen		MLS	5.0 SANDY SILT (MLS) Black, moist, soft, slightly plastic silt with roots and casts.		1 1 4 5	1.5	Moderate hydrocarbon odor.
7								
8			SM	8.0 SILTY SAND (SM) Black, moist to wet, medium dense, fine to coarse grained sand.		3 3 12 17	0.3	Hydrocarbon product. Sample blocked by cobble, low recovery.
9				9.0 Not Sampled. Likely fractured rock.				
10								
11								
12								
13								
14								
15								
16				16.0				
17								

ENE START WELL LOG B (AVERY) START_AVERY 1.GPJ E&E PORTLAND.GDT 7/31/07



ecology and environment, inc.

PROJECT NAME: Avery Landing
 WELL NO.: EMW 02

DRILLING LOG OF WELL/BORING NO. EMW 03

Page 1 of 1

DATE DRILLED: 4/17/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: Arbitrary Site Datum
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation 97.9 ft	Heavy Gauged Steel Protective Casing			ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1	2" PVC Cement Hydrated Bentonite Chips			Not Sampled.				
2				3.0				
3				Not Sampled. Slough.		5 3 3 2	0.3	
4				5.0				
5				Not Sampled. Woody Debris				
6								
7	10/20 Filter Sand							
8	20-slot V-wire screen			9.0				
9				Not Sampled.				
10				11.0				
11			MLS	SANDY SILT WITH CLAY (MLS) Dark Brown, moist to wet, medium stiff, slight plasticity, with fine sand and clay.		3 5 6 8	2.0	
12			GWS	SANDY GRAVEL WITH SILT (GWS) Dark gray, wet, medium dense, fine to coarse, rounded gravel with coarse sand and some silt packed tightly in pore spaces.		8 10 13 13	1.2	
13				15.0				
14				Not Sampled.				
15								
16								
17								
18								
19				19.0				Refusal
20								



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PROJECT NAME: Avery Landing
 WELL NO.: EMW 03

DRILLING LOG OF WELL/BORING NO. EMW 04

Page 1 of 1

DATE DRILLED: 4/17/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: Arbitrary Site Datum
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation 98.14 ft	Heavy Gauged Steel Protective Casing			ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1	2" PVC Cement			Not Sampled.				
2	Hydrated Bentonite Chips							
3				3.0				
4				SANDY GRAVEL (GPS) Coarse, fractured gravel with sand.		4 4 4 2	IR <.3	Difficult drilling. Lithology based on drill cuttings. Insufficient recovery.
5	10/20 Filter Sand					4 5 8 12	IR <.3	Insufficient recovery.
6						15 14 14 15	IR <.3	Insufficient recovery.
7	20-slot V-wire screen					9 7 6 6	IR <.3	Insufficient recovery.
8						8 9 12 14	IR <.3	Sampler saturated: Hydrocarbon sheen on groundwater. Insufficient recovery.
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								



ecology and environment, inc.

PROJECT NAME: Avery Landing
 WELL NO.: EMW 04

DRILLING LOG OF WELL/BORING NO. EMW 05

Page 1 of 1

DATE DRILLED: 4/18/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: Arbitrary Site Datum
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation 100.02 ft	Heavy Gauged Steel Protective Casing			ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1	Cement 2" PVC Hydrated Bentonite Chips			Not Sampled.				
2				3.0				
3								
4								
5								
6								
7	10/20 Filter Sand							
8								
9	20-Slot V-wire screen							
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								



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PROJECT NAME: Avery Landing
 WELL NO.: EMW 05

DRILLING LOG OF WELL/BORING NO. EMW 06

Page 1 of 2

DATE DRILLED: 4/18/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: Arbitrary Site Datum
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation 99.15 ft	Heavy Gauged Steel Protective Casing			ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1	Cement 2" PVC			Not Sampled. Black glassy sand/gravel/cinder				
2	Hydrated Bentonite Chips							
3				3.0				
4			SWG	WELL GRADED SAND WITH GRAVEL (SWG) Moderate brown, dry, dense, medium to very coarse grained sand with fractured gravel and some silt.		8 6 8 9	1.0	
5			SWG					
6			SWG			10 8 6 9	0.5	
7	10/20 Filter Sand			7.5				
8			MLS	SANDY SILT (MLS) Black, moist, soft, slight plasticity silt with fine sand and roots.		3 1 1 1	1.2	Hydrocarbon odor and sheen.
9	20-slot V-wire screen			9.5				
10			SWG	WELL GRADED SAND WITH GRAVEL (SWG) Black, moist to wet, medium dense, fine to very coarse grained sand with decreasing silt and increasing gravel content with depth.		3 3 8 15	1.3	Hydrocarbon odor and oily liquid present.
11				11.0				
12			GWS	WELL GRADED GRAVEL WITH SAND (GWS) Gray, wet, dense, fine to coarse grained gravel with medium to coarse sand and some silt present.		13 15 28 36	IR	Sample stained black with oily liquid. Insufficient recovery.
13			GWS					
14								



ecology and environment, inc.

PROJECT NAME: Avery Landing
 WELL NO.: EMW 06

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
85			GWS	15.0 WELL GRADED GRAVEL WITH SAND (GWS) Gray, wet, dense fine to coarse grained gravel with medium to coarse sand and some silt and cobbles present. <i>(continued)</i>			IR	Insufficient recovery.
15			GWS	17.0 WELL GRADED GRAVEL WITH SAND (GWS) Gray, wet, dense, fine to coarse grained gravel with medium to coarse sand and some silt.			IR	Cuttings show oily liquid. Easier drilling. Insufficient recovery.
16			GWS	18.5 Increased sand/fine gravel content from last sample.			IR	Difficult drilling. Insufficient recovery.
17								
18								
19				WELL GRADED GRAVEL WITH SAND (GWS) Gray, wet, dense, fine to coarse grained gravel with medium to coarse sand. Increased coarse gravel from last sample.				
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								

ENE START WELL LOG B (AVERY) START_AVERY 1.GPJ E&E PORTLAND.GDT 7/31/07



DRILLING LOG OF WELL/BORING NO. ESB 01

Page 1 of 1

DATE DRILLED: 4/18/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: N/A
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation				ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1				Not Sampled.				
2								
3								
4								
5				5.0				
6				WELL GRADED SAND WITH GRAVEL. Moderate brown, dry, dense, medium to very coarse grained sand with fractured gravel and some silt.		4 5 5 7	0.5	
7								
8						12 15 9 14	1.4	
9				9.0				Hydrocarbon odor and sheen on groundwater
10								
11								
12								
13								
14								
15								

ENE START WELL LOG B (AVERY) START_AVERY.3.GPJ E&E PORTLAND.GDT 7/31/07



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PROJECT NAME: Avery Landing
 WELL NO.: ESB 01

DRILLING LOG OF WELL/BORING NO. ESB 02

Page 1 of 1

DATE DRILLED: 4/18/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: N/A
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation				ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1				Not Sampled.				
1.0								
2			SPG	WELL GRADED GRAVELLY SAND (SPG) Medium brown, dry, dense, medium to very coarse grained sand with gravel, cobbles and burnt wood fragments.			1.0	Began drilling at 2:05:00 PM. Auger was refused at the first location at a depth of 3.0 feet. Relocated 3.0' to the East. Auger was refused at 5.0'. A third attempt was refused at 3.0'
3								
3.0								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

ENE START WELL LOG B (AVERY) START_AVERY.3.GPJ E&E PORTLAND.GDT 7/31/07



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PROJECT NAME: Avery Landing
 WELL NO.: ESB 02

DRILLING LOG OF WELL/BORING NO. ESB 03

Page 1 of 1

DATE DRILLED: 4/18/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: N/A
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation				ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1				Not Sampled.				
2								
3				3.0				
4				WELL GRADED SAND WITH GRAVEL. Medium brown, dry, very dense, medium to coarse grained sand with fractured gravel.			1.0	
5								
6						12 13 31 18	0.7	
7			FILL					
8						10 13 20 Ref	IR <0.3'	Insufficient recovery.
9								
10				10.0		12 13 16 18	IR <0.3'	Slight hydrocarbon odor. Insufficient recovery.
11				POORLY GRADED SAND (SP) Tan to gray, dry to moist (wet at depths greater than 11.5'), dense, medium grained sand with laminae of silt, increasing silt with depth.				
12			SP			1 2 5 9	IR <0.3'	Strong hydrocarbon odor. Product present. Insufficient recovery.
13				13.0				
14								
15								

ENE START WELL LOG B (AVERY) START_AVERY.3.GPJ E&E PORTLAND.GDT 7/31/07



ecology and environment, inc.

PROJECT NAME: Avery Landing
 WELL NO.: ESB 03

DRILLING LOG OF WELL/BORING NO. ESB 04

Page 1 of 1

DATE DRILLED: 4/18/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: N/A
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation				ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1				Not Sampled.				
2								
3			SW	3.0 WELL GRADED SAND (SW) Medium brown, dry, very dense,				
4			SW-SM	4.0 medium to very coarse grained sand with fractured medium grained 4.5 gravel.		15 17 40 35	1.0	Hydrocarbon odor and sheen.
5			SWG	5.5 WELL GRADED SAND AND SILTY SAND (SW-SM)				
6				Gray, moist, fine grained sand with silty interbeds		10 13 15 20	1.0	Hydrocarbon odor, no sheen.
7			SP	WELL GRADED SAND WITH GRAVEL (SWG)				
8				Dry, very dense, medium to very coarse sand with fractured gravel		6 8 16 10	2.0	Strong hydrocarbon odor.
9			SM	8.5 POORLY GRADED SAND (SP)				
10				Gray, dry, medium dense, medium grained sand.				
11				SILTY SAND (SM)				
12				Dark gray, stiff, slight plasticity silt with fine sand.				Strong hydrocarbon odor, product present.
13								
14								
15								

ENE START WELL LOG B (AVERY) START_AVERY.3.GPJ E&E PORTLAND.GDT 7/31/07



ecology and environment, inc.

PROJECT NAME: Avery Landing
 WELL NO.: ESB 04

DRILLING LOG OF WELL/BORING NO. ESB 05

Page 1 of 2

DATE DRILLED: 4/19/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: N/A
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation				ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1				Not Sampled.				
2								
3				3.0				
4			SWG	WELL GRADED SAND WITH GRAVEL (SWG) Black to gray, moist, dense, medium to very coarse grained sand with fractured gravel.		6 6 12 22	0.7	Hydrocarbon odor and sheen.
5								
6						15 9 8 10	0.8	
7				7.5				
8			MLS	SANDY SILT (MLS) Gray, moist, medium stiff, moderate plasticity, silt with fine grained sand.		6 4 2 2	1.5	Strong hydrocarbon odor and slight sheen.
9								
10			SW	WELL GRADED SAND (SW) Brown to black, wet, very dense, medium to very coarse sand.		2 5 13 16	1.7	
11				11.0				
12			SWG	WELL GRADED GRAVELLY SAND (SWG) Brown to black, wet, very dense, medium to very coarse sand with gravel.		17 15 25 50	1.5	Black oily liquid with strong hydrocarbon odor.
13								
14						10 4 17 18	1.2	
15								

ENE START WELL LOG B (AVERY) START_AVERY.3.GPJ E&E PORTLAND.GDT 7/31/07



ecology and environment, inc.

PROJECT NAME: Avery Landing
 WELL NO.: ESB 05

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
16			SWG	16.0		5 13 17 15	1.2	
17			SWG	WELL GRADED GRAVELLY SAND WITH SILT (SWG) Light to dark gray, dry to moist, dense, fine to coarse silty sand with fine gravel and rounded cobbles.		8 18 17 5	1.0	Hydrocarbon odor with no product due to increased silt content.
18			MLS	18.5				
19			MLS	19.0				No hydrocarbon sheen or odor.
20			SW-SM	WELL GRADED SILTY SAND WITH GRAVEL (SW-SM) Light brown, dry to moist, dense, fine to mostly coarse sand with rounded gravel and silt.		15 19 22 17	1.3	No hydrocarbon sheen or odor.
21								
22						11 19 25 20	1.0	No hydrocarbon sheen or odor.
23								
24						13 18 23 25	1.1	
25				25.0				
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

ENE START WELL LOG B (AVERY) START_AVERY.3.GPJ E&E PORTLAND.GDT 7/31/07



DRILLING LOG OF WELL/BORING NO. ESB 06

Page 1 of 1

DATE DRILLED: 4/19/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: N/A
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation				ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1				Not Sampled.				
2								
3				3.0				
4				SILTY SAND WITH GRAVEL. Light brown, dry, medium dense, fine sand to silt with fractured gravel and fragments of cinder and brick.		30 18 5 20	1.0	
5			FILL					
6						18 9 22 32	1.0	
7				7.5				
8				SANDY SILT (MLS) Olive gray, moist, medium stiff, moderate plasticity, sandy silt.		8 12 14 15	0.4	Hydrocarbon odor.
9			MLS			7 7 5 6	1.2	
10								
11				11.5				
12			SW	WELL GRADED SAND (SW) Dark gray, wet, medium dense, fine to coarse sand.		2 3 6 16	1.5	Strong hydrocarbon odor. Oily liquid present.
13				13.0				
14								
15								

ENE START WELL LOG B (AVERY) START_AVERY.3.GPJ E&E PORTLAND.GDT 7/31/07



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PROJECT NAME: Avery Landing
 WELL NO.: ESB 06

DRILLING LOG OF WELL/BORING NO. ESB 07

Page 1 of 2

DATE DRILLED: 4/19/2007
 LOGGED BY: Jeff Fowlow
 CHECKED BY: S. Hall
 DRILLING CONTRACTOR: Environmental West Exploration, Inc.
 DRILLED BY: Randy Wilder
 DRILLING METHOD: Hollow Stem Auger
 VERTICAL DATUM: N/A
 LOCATION: Avery, ID

PROJECT NAME: Avery Landing
 PROJECT LOCATION: Avery, Idaho
 SSID #: 10ZZ
 EPA TASK MANAGER: Earl Liverman
 TDD #: 07-03-0004
 START PROJECT #: 002233.0193.01SF
 START PROJ MGR: Steve Hall

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
Ground Surface Elevation				ground surface (gs)				This log is part of the report prepared for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.
1				Not Sampled.				
2								
3				3.0				
4			FILL	POORLY GRADED SAND. Black, dry, medium dense, very coarse grained sand and cinder.		8 12 13 9	1.2	
5				5.5				
6			MLS	SANDY SILT (MLS) Olive gray, moist to dry, stiff, medium plasticity, fine sand and silt with occasional gravel.		8 20 12 10	1.1	Hydrocarbon odor.
7						7 7 5 7	1.2	
8								
9				9.0				
10				*** Sampler blocked by wood Fragments ***		4 6 12 17	0.8	Hydrocarbon odor and sheen.
11						7 7 5 6	?	Black wood fragments possibly stained by hydrocarbons.
12								
13								
14				14.0		9 12 13 12	0.8	Hydrocarbon odor and heavy sheen.
15			GW					

ENE START WELL LOG B (AVERY) START_AVERY.3.GPJ E&E PORTLAND.GDT 7/31/07



ecology and environment, inc.

PROJECT NAME: Avery Landing
 WELL NO.: ESB 07

ELEVATION DEPTH (feet)	WELL COMPLETION DIAGRAM	GRAPHIC LOG	USCS	SOIL/ROCK DESCRIPTION	SAMPLE INTERVAL	BLOW COUNTS	RECOVERY (FT)	COMMENTS
16			GW	WELL GRADED GRAVEL (GW) Light to dark gray, moist to wet, medium dense, fine to coarse fractured gravel with silt and fine sand. <i>(continued)</i>			1.0	Hydrocarbon odor and product present.
17				17.0				
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

ENE START WELL LOG B (AVERY) START_AVERY 3.GPJ E&E PORTLAND.GDT 7/31/07



Appendix C
Chains of Custody

IDAOR

EPA Contract Number: EP-5.7-06-012

CHAIN OF CUSTODY RECORD

Site #: 10ZZ

Contact Name: Steven Hall

Contact Phone: (206) 920-1733

No: 10ZZ-04/22/07-0002

Cooler #: 5 coolers

Lab: Lauck's testing Laboratories, Inc.

Lab Phone: (206) 767-5030

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD	Samp_Concentra tion
11	07040101	EMW-01 SB 06	VOCs	Soil	4/16/2007	4	40 mL Vial	4 C		should be clean
	07040101	EMW-01 SB 06	Moisture	Soil	4/16/2007	1	2 oz jar	4 C		should be clean
22	07040102	EMW-01 SB 02	TAL Metals (ICP-MS)	Soil	4/16/2007	1	4 oz jar	4 C		should be clean
	07040102	EMW-01 SB 02	TPH-DRO	Soil	4/16/2007	1	8 oz jar	4 C		should be clean
12	07040103	EMW- 02 SB 05	VOCs	Soil	4/17/2007	4	40 mL Vial	4 C		contaminated
	07040103	EMW- 02 SB 05	Moisture	Soil	4/17/2007	1	2 oz jar	4 C		contaminated
23	07040105	EMW- 02 SB 05	TPH-DRO	Soil	4/17/2007	1	8 oz jar	4 C		contaminated
	07040105	EMW- 02 SB 05	TAL Metals (ICP-MS)	Soil	4/17/2007	1	4 oz jar	4 C		contaminated
24	07040106	EMW- 03 SB 11	TPH-DRO	Soil	4/17/2007	1	8 oz jar	4 C		
	07040106	EMW- 03 SB 11	TAL Metals (ICP-MS)	Soil	4/17/2007	1	4 oz jar	4 C		
13	07040107	EMW- 03 SB 11	VOCs	Soil	4/17/2007	9	40 mL Vial	4 C	Y	
	07040107	EMW- 03 SB 11	Moisture	Soil	4/17/2007	1	2 oz jar	4 C		
25	07040108	EMW- 04 SB 03	TPH-DRO	Soil	4/17/2007	1	8 oz jar	4 C	Y	contaminated
	07040108	EMW- 04 SB 03	TAL Metals (ICP-MS)	Soil	4/17/2007	1	4 oz jar	4 C	Y	contaminated
	07040108	EMW- 04 SB 03	TAL Metals (ICP-MS)	Soil	4/17/2007	1	2 oz jar	4 C	Y	contaminated
14	07040109	EMW- 05 SB 09	VOCs	Soil	4/18/2007	4	40 mL Vial	4 C		contaminated
26	07040110	EMW- 05 SB 09	Moisture	Soil	4/18/2007	1	2 oz jar	4 C		contaminated
	07040110	EMW- 05 SB 09	TPH-DRO	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
	07040110	EMW- 05 SB 09	TAL Metals (ICP-MS)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated

Special Instructions: Rush TAT (Friday, April 27) for 07040132, 07040133, 07040134, and 07040143 (all analyses).

Note that many samples are contaminated with TPH, as indicated.

STD TA⁺ for remaining same yes.

Stage 2 SEDD and CLP-equivalent deliverable.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

[illegible]

Removal Program

START III, Seattle, WA

EPA Contract Number: EP-S7-06-02

CHAIN OF CUSTODY RECORD:

Site #: 10ZZ

Contact Name: Steven Hall

Contact Phone: (206) 920-1739

No: 10ZZ-04/22/07-0002

Cooler #: 5 coolers

Lab: Laucks testing Laboratories, Inc.

Lab Phone: (206) 767-5060

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD	Sampl_ Concentra tion
14	07040111	R3-01	TAL Metals (ICP-MS)	Water	4/18/2007	1	500 mL poly	4 C and HNO3		should be clean
	07040111	R3-01	TPH-DRO	Water	4/18/2007	2	1 liter	4 C and HCl		should be clean
	07040111	R3-01	VOCs	Water	4/18/2007	3	40 mL Vial	4 C and HCl		should be clean
15	07040112	EMMV-06 SB 07	VOCs	Soil	4/18/2007	4	40 mL Vial	4 C		contaminated
	07040112	EMMV-06 SB 07	Moisture	Soil	4/18/2007	1	2 oz jar	4 C		contaminated
27	07040113	EMMV-06 SB 07	TAL Metals (ICP-MS)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
28	07040114	EMMV-06 SB 09	TPH-DRO	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
16	07040115	ESE-01 SB 07	VOCs	Soil	4/18/2007	4	40 mL Vial	4 C		contaminated
	07040115	ESE-01 SB 07	Moisture	Soil	4/18/2007	1	2 oz jar	4 C		contaminated
29	07040116	ESE-01 SB 07	TAL Metals (ICP-MS)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
	07040116	ESE-01 SB 07	TPH-DRO	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
30	07040117	ESE-02 SB 03	TAL Metals (ICP-MS)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
17	07040118	ESE-03 SB 09	VOCs	Soil	4/18/2007	4	40 mL Vial	4 C		
	07040118	ESE-03 SB 09	Moisture	Soil	4/18/2007	1	2 oz jar	4 C		
31	07040119	ESE-03 SB 11	TAL Metals (ICP-MS)	Soil	4/18/2007	1	4 oz jar	4 C		
	07040119	ESE-03 SB 11	TPH-DRO	Soil	4/18/2007	1	8 oz jar	4 C		
32	07040120	ESE-04 SB 03	TPH-DRO	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
	07040120	ESE-04 SB 03	TAL Metals (ICP-MS)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated

Special Instructions: Rush TAT (Friday April 27) for 07040132, 07040133, 07040134, and 07040143 (all analyses).

Note that many samples are contaminated with TPH, as indicated.

STD TA" for remaining samples.

Stage 2 SEDD and CLP-equivalent deliverable.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

[illegible]

EPA Contract Number: EP-S-7-05-02

Contact Phone: (206) 920-1739

Lab Phone: (206) 767-5060

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD	Samp_Concentra tion
18	07040121	ESE-04 SB 07	VOCs	Soil	4/18/2007	4	40 mL Vial	4 C		contaminated
	07040121	ESE-04 SB 07	Moisture	Soil	4/18/2007	1	2 oz jar	4 C		contaminated
33	07040122	ESE-04 SB 07	TAL Metals (ICP-MS)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
	07040122	ESE-04 SB 07	TPH-DRO	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
19	07040123	ESE-05 SB 09	VOCs	Soil	4/19/2007	4	40 mL Vial	4 C		contaminated
	07040123	ESE-05 SB 09	Moisture	Soil	4/19/2007	1	2 oz jar	4 C		contaminated
34	07040124	ESE-05 SB 15	TPH-DRO	Soil	4/19/2007	1	8 oz jar	4 C		contaminated
	07040124	ESE-05 SB 15	TAL Metals (ICP-MS)	Soil	4/19/2007	1	4 oz jar	4 C		contaminated
20	07040126	ESE-06 SB 09	VOCs	Soil	4/19/2007	4	40 mL Vial	4 C		contaminated
	07040126	ESE-06 SB 09	Moisture	Soil	4/19/2007	1	2 oz jar	4 C		contaminated
35	07040127	ESE-06 SB 11	TAL Metals (ICP-MS)	Soil	4/19/2007	1	4 oz jar	4 C		contaminated
	07040127	ESE-06 SB 11	TPH-DRO	Soil	4/19/2007	1	8 oz jar	4 C		contaminated
21	07040128	ESE-07 SB 07	VOCs	Soil	4/19/2007	4	40 mL Vial	4 C		contaminated
	07040128	ESE-07 SB 07	Moisture	Soil	4/19/2007	1	2 oz jar	4 C		contaminated
36	07040129	ESE-07 SB 13	TAL Metals (ICP-MS)	Soil	4/19/2007	1	4 oz jar	4 C		contaminated
	07040129	ESE-07 SB 13	TPH-DRO	Soil	4/19/2007	1	8 oz jar	4 C		contaminated
10	07040130	TB-01	VOCs	Water	4/20/2007	2	40 mL Vial	4 C		
37	07040131	HC-4	TAL Metals (ICP-MS)	Waste	4/20/2007	1	2 oz jar	None		product
	07040131	HC-4	TPH-DRO	Waste	4/20/2007	1	2 oz jar	None		product

Stage 2 SEDD and CLP-equivalent deliverable.

CHAIN OF CUSTODY: #

[illegible]

EPA Contract Number: EP-S7-06-02

Contact Name: Steven Hall

Contact Phone: (206) 920-1739

Cooler #: 5 coolers

Lab: Laucks testing Laboratories, Inc.

Lab Phone: (206) 767-5060

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD	Samp_ Concentra- tion
1	07040135	EMW-01	TAL Metals (ICP-MS)	Ground Water	4/21/2007	3	500 mL HDPE	4 C and HNO3	Y	should be clean
	07040135	EMW-01	TPH-DRO	Ground Water	4/21/2007	6	1 liter amber	4 C and HCl	Y	should be clean
2	07040136	EMW-02	VOCs	Ground Water	4/21/2007	3	40 ml VOA	4 C and HCl		contaminated
	07040136	EMW-02	TAL Metals (ICP-MS)	Ground Water	4/21/2007	1	500 mL HDPE	4 C and HNO3		contaminated
3	07040136	EMW-02	TPH-DRO	Ground Water	4/21/2007	2	1 liter amber	4 C and HCl		contaminated
	07040137	EMW-03	VOCs	Ground Water	4/21/2007	3	40 ml VOA	4 C and HCl		contaminated
	07040137	EMW-03	TAL Metals (ICP-MS)	Ground Water	4/21/2007	1	500 mL HDPE	4 C and HNO3		contaminated
	07040137	EMW-03	TPH-DRO	Ground Water	4/21/2007	2	1 liter amber	4 C and HCl		contaminated
4	07040138	EMW-04	VOCs	Ground Water	4/21/2007	3	40 ml VOA	4 C and HCl		contaminated
	07040138	EMW-04	TAL Metals (ICP-MS)	Ground Water	4/21/2007	1	500 mL HDPE	4 C and HNO3		contaminated
	07040138	EMW-04	TPH-DRO	Ground Water	4/21/2007	2	1 liter amber	4 C and HCl		contaminated

Special Instructions: Rush TAT (Friday, April 27) for 07040132, 07040133, 07040134, and 07040143 (all analyses).

Note that many samples are contaminated with TPH, as indicated.

STD TA[™] for remaining samples.

Stage 2 SEDD and CLP-equivalent deliverable.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

[illegible]

Removal Program

START III, Seattle, WA

EPA Contract Number: EP-S7-06-02

CHAIN OF CUSTODY RECORD

Site #: 10ZZ

Contact Name: Steven Hall

Contact Phone: (206) 920-1739

No: 10ZZ-04/22/07-0002

Cooler #: 5 coolers

Lab: Laucks testing Laboratories, Inc.

Lab Phone: (203) 767-5060

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD	Samp_ Concentra- tion
5	07040139	EMW-05	VOCs	Ground Water	4/21/2007	3	40 ml VOA	4 C and HCl		contaminated
	07040139	EMW-05	TAL Metals (ICP-MS)	Ground Water	4/21/2007	1	500 mL HDPE	4 C and HNO3		contaminated
	07040139	EMW-05	TPH-DRO	Ground Water	4/21/2007	2	1 liter amber	4 C and HCl		contaminated
6	07040140	EMW-06	VOCs	Ground Water	4/21/2007	3	40 ml VOA	4 C and HCl		contaminated
	07040140	EMW-06	TAL Metals (ICP-MS)	Ground Water	4/21/2007	1	500 mL HDPE	4 C and HNO3		contaminated
	07040140	EMW-06	TPH-DRO	Ground Water	4/21/2007	2	1 liter amber	4 C and HCl		contaminated
8	07040141	HC-1	VOCs	Ground Water	4/21/2007	3	40 ml VOA	4 C and HCl		
	07040141	HC-1	TAL Metals (ICP-MS)	Ground Water	4/21/2007	1	500 mL HDPE	4 C and HNO3		
	07040141	HC-1	TPH-DRO	Ground Water	4/21/2007	2	1 liter amber	4 C and HCl		
9	07040142	MW-5	VOCs	Ground Water	4/21/2007	3	40 ml VOA	4 C and HCl		
	07040142	MW-5	TAL Metals (ICP-MS)	Ground Water	4/21/2007	1	500 mL HDPE	4 C and HNO3		

Special Instructions: Rush TAT (Friday, April 27) for 07040132, 07040133, 07040134, and 07040143 (all analyses).

Note that many samples are contaminated with TPM, as indicated.

STD TA⁺ for remaining samples.

Stage 2 SEDD and CLP-equivalent deliverable.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY:

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	[Signature]	4-23-07	[Signature]	4/23/07	1135						

EPA Contract Number: EP-S7-06-02

CHAIN OF CUSTODY RECORD

Site #: 10ZZ

Contact Name: Steven Hall

Contact Phone: (206) 920-1739

No: 10ZZ-04/22/07-0001

Cooler #: 6 coolers

Lab: STL-Seattle

Lab Phone: (253) 922-2310

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD	Samp_Concentra tion
1	07040102	EMW-01 SB 02	Mercury Low Level (Hold)	Soil	4/16/2007	1	4 oz jar	4 C		should be clean
2	07040102	EMW-01 SB 02	PCBs (low level), SVOC	Soil	4/16/2007	1	8 oz jar	4 C		should be clean
3	07040104	EMW- 02 SB 07	PCBs (low level), SVOC	Soil	4/17/2007	1	8 oz jar	4 C		contaminated
4	07040105	EMW- 02 SB 05	Mercury Low Level (Hold)	Soil	4/17/2007	1	4 oz jar	4 C		contaminated
5	07040106	EMW- 03 SB 11	PCBs (low level), SVOC	Soil	4/17/2007	1	8 oz jar	4 C		
6	07040106	EMW- 03 SB 11	Mercury Low Level (Hold)	Soil	4/17/2007	1	4 oz jar	4 C		
7	07040108	EMW- 04 SB 03	Mercury Low Level (Hold)	Soil	4/17/2007	1	4 oz jar	4 C		contaminated
8	07040108	EMW- 04 SB 03	PCBs (low level), SVOC	Soil	4/17/2007	2	8 oz jar	4 C	Y	contaminated
9	07040110	EMW- 05 SB 09	PCBs (low level), SVOC	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
10	07040110	EMW- 05 SB 09	Mercury Low Level (Hold)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
11	07040111	RB-01	PCBs (low level)	Water	4/18/2007	2	1 liter	4 C		should be clean
12	07040111	RB-01	SVOC (low level)	Water	4/18/2007	2	1 liter	4 C		should be clean
13	07040113	EMW- 06 SB 07	Mercury Low Level (Hold)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
14	07040114	EMW- 06 SB 09	PCBs (low level), SVOC	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
15	07040116	ESE-01 SB 07	PCBs (low level), SVOC	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
16	07040116	ESE-01 SB 07	Mercury Low Level (Hold)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
17	07040117	ESE-02 SB 03	PCBs (low level), SVOC	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
18	07040119	ESE-03 SB 11	Mercury Low Level (Hold)	Soil	4/18/2007	1	4 oz jar	4 C		
19	07040119	ESE-03 SB 11	PCBs (low level), SVOC	Soil	4/18/2007	1	8 oz jar	4 C		

Special Instructions: Rush TAT (Friday, April 27) for 07040132, 07040133, 07040134, and 07040143 (all analyses).

Asking for low level PCBs (soil and water) and SVOCs (waters only), but note that many of these samples are contaminated with TPH, as indicated.

Please hold low level mercury pending further notice.

STD TA⁺⁺ for remaining samples.

Stage 2 SEDD and CLP-equivalent deliverable.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

[illegible]

EPA Contract Number: EP-S7-06-02

CHAIN OF CUSTODY RECORD

Site #: 10ZZ

Contact Name: Steven Hall

Contact Phone: (206) 920-1739

No: 10ZZ-04/22/07-0001

Cooler #: 6 coolers

Lab: STL-Seattle

Lab Phone: (253) 922-2310

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD	Samp_Concentration
13	07040120	ESE-04 SB 03	Mercury Low Level (Hold)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
	07040120	ESE-04 SB 03	PCBs (low level), SVOC	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
14	07040122	ESE-04 SB 07	Mercury Low Level (Hold)	Soil	4/18/2007	1	4 oz jar	4 C		contaminated
	07040122	ESE-04 SB 07	PCBs (low level), SVOC	Soil	4/18/2007	1	8 oz jar	4 C		contaminated
	07040124	ESE-05 SB 15	PCBs (low level), SVOC	Soil	4/19/2007	1	8 oz jar	4 C		contaminated
15	07040124	ESE-05 SB 15	Mercury Low Level (Hold)	Soil	4/19/2007	1	4 oz jar	4 C		contaminated
16	07040125	ESE-05 SB 23	PCBs (low level), SVOC	Soil	4/19/2007	1	8 oz jar	4 C		contaminated
	07040127	ESE-06 SB 11	PCBs (low level), SVOC	Soil	4/19/2007	1	8 oz jar	4 C		contaminated
17	07040127	ESE-06 SB 11	Mercury Low Level (Hold)	Soil	4/19/2007	1	4 oz jar	4 C		contaminated
18	07040129	ESE-07 SB 13	PCBs (low level), SVOC	Soil	4/19/2007	1	8 oz jar	4 C		contaminated
	07040129	ESE-07 SB 13	Mercury Low Level (Hold)	Soil	4/19/2007	1	4 oz jar	4 C		contaminated
19	07040131	HC-4	PCBs (low level), SVOC	Waste	4/20/2007	1	4 oz jar	None		product
20	07040132	SW-01	PCBs (low level)	Surface Water	4/20/2007	2	1 liter amber	4 C		should be clean
	07040132	SW-01	SVOC (low level)	Surface Water	4/20/2007	2	1 liter amber	4 C		should be clean
	07040132	SW-01	Mercury Low Level (Hold)	Surface Water	4/20/2007	4	40 mL jar	4 C		should be clean
21	07040133	SW-02	Mercury Low Level (Hold)	Surface Water	4/20/2007	4	40 mL jar	4 C		contaminated

Special Instructions: Rush TAT (Friday, April 27) for 07040132, 07040133, 07040134, and 07040143 (all analyses).

Asking for low level PCBs (soil and water) and SVOCs (waters only), but note that many of these samples are contaminated with TPH, as indicated.

Please hold low level mercury pending further notice.

STD TA⁺⁺ for remaining samples.

Stage 2 SEDD and CLP-equivalent deliverable.



SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

[illegible]


Contact Phone: (206) 920-1739

Lab Phone: (253) 922-2310

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		4-23-07		4/23/07	1050 A						

Contact Phone: (206) 920-1739

Lab Phone: (253) 922-2310

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
		4-23-07	Khasley	4/23/07	1050A						

EPA Contract Number: EP-S7-06-02

CHAIN OF CUSTODY RECORD

Site #: 10ZZ

Contact Name: Steven Hall

Contact Phone: (206) 920-1739

No: 10ZZ-04/22/07-0001

Cooler #: 6 coolers

Lab: STL-Seattle

Lab Phone: (253) 922-2310

[illegible]

Special Instructions: Rush TAT (Friday, April 27) for 07040132, 07040133, 07040134, and 07040143 (all analyses).

Asking for low level PCBs (soil and water) and SVOCs (waters only), but note that many of these samples are contaminated with TPH, as indicated.

Please hold low level mercury pending further notice.

STD TA² for remaining samples.

Stage 2 SEDD and CLP-equivalent deliverable.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

[illegible]

Appendix D
Analytical Data Reports



ecology and environment, inc.

International Specialists in the Environment

720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: May 26, 2007
TO: Steve Hall, Project Manager, E & E, Seattle, Washington
FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*
SUBJ: Organic Data Quality Assurance Review, Avery Landing Site,
Avery, Idaho
REF: TDD: 07-03-0004 PAN: 002233.0193.01SF

The data quality assurance review of 4 water samples collected from the Avery Landing site in Avery, Idaho, has been completed. Volatile Organic Compound (VOC) analysis (EPA Method 8260) was performed by Laucks Testing Services, Seattle, Washington.

The samples were numbered:

07040132 07040133 07040134 07040143

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained and received within the QC limits of $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$. The samples were collected on April 20, 2007, and were analyzed on April 25, 2005, therefore meeting QC criteria of less than 14 days between collection and analysis for preserved water samples.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All water Relative Standard Deviations (RSDs) were less than the QC limits of 30% or had a correlation coefficient > 0.995 .

4. Continuing Calibration: Acceptable.

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% or had a drift < 15%.

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. System Monitoring Compounds (SMCs): Acceptable.

All SMC recoveries were within QC limits.

7. Blank Spike (BS) Analysis: Acceptable.

BS analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

8. Internal Standards: Acceptable.

All internal standards were within ± 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

9. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

10. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

11. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
- U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040132

Lab Name: Lauck's Testing Laboratories, Inc.

Contract: _____

SDS NO.: IDA01

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA01-001

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y9425012.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 11:19

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-86-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropane	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

MW 526-07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040132

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA01

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA01-001

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425012.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 11:19

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

MW
52607

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040133

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA01Run Sequence: R017155Matrix: (SOIL/SED/WATER) WaterLab Sample ID: IDA01-002Sample wt/vol: 5.00 (g/mL) mLLab File ID: Y0425013.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 11:43GC Column: DB-624 20m ID: 0.18 (mm)Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethane	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

MW
526-01

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040133

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA01

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA01-002

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425013.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 11:43

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

MW
5/26/07

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040134

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA01Run Sequence: R017155Matrix: (SOIL/SED/WATER) WaterLab Sample ID: IDA01-003Sample wt/vol: 5.00 (g/mL) mLLab File ID: Y0425014.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 12:07GC Column: DB-624 20m ID: 0.18 (mm)Dilution Factor: 1.0

Soil Extract Volume: _____ (mL)

Soil Aliquot Volume: _____ (mL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-59-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethane	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040134

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA01

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA01-003

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425014.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 12:07

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

MW
526-07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040143

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA01

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA01-004

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425015.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 12:32

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

MW
52607

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040143

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA01

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA01-004

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425015.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 12:32

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

MW
526-07



ecology and environment, inc.

International Specialists in the Environment

720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: May 28, 2007

TO: Steve Hall, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *mw*

SUBJ: **Organic Data Quality Assurance Review, Avery Landing Site, Avery, Idaho**

REF: TDD: 07-03-0004 PAN: 002233.0193.01SF

The data quality assurance review of 1 waste, 10 water, and 11 soil samples collected from the Avery Landing site in Avery, Idaho, has been completed. Volatile Organic Compound (VOC) analysis (EPA Method 8260) was performed by Laucks Testing Services, Seattle, Washington.

The samples were numbered:

Water	07040111	07040136	07040137	07040138	07040139
	07040135	07040140	07040141	07040142	07040130
Soil	07040101	07040103	07040107	07040109	07040112
	07040115	07040118	07040121	07040123	07040126
	07040128				
Waste	07040131				

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained at 4°C ($\pm 2^\circ\text{C}$) except one cooler which was received at 7.2 °C; no action was taken based on this slight outlier. The samples were collected on April 20, 2007, and were analyzed on April 25, 2005, therefore meeting QC criteria of less than 14 days between collection and analysis for preserved water samples. There are no holding times for waste samples.

2. Tuning: Satisfactory.

Tuning was performed at the beginning of each 12-hour analysis sequence except for the matrix spike analyses for sample 07040135; these spike analyses were used for sample qualification as the spike reanalyses had more QC outliers due to internal standard outliers. All results were within QC limits.

3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All water Relative Standard Deviations (RSDs) were less than the QC limits of 30% or had a correlation coefficient > 0.995.

4. Continuing Calibration: Satisfactory.

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% or had a drift < 15% except bromomethane with a low % drift and 2-hexanone with a high % recovery in the April 26, 2007 calibration, carbon disulfide with a high recovery in the May 1, 2007 (1050) calibration, dichlorodifluoromethane with a high recovery in the May 2, 2007 (1428) calibration, and dichlorodifluoromethane with a low recovery and cis-1,3-dichloropropane and 4-methyl-2-phenol with high recoveries in the May 8, 2007 calibration. Positive sample results associated with the high recovery outliers were qualified as estimated quantities (J) and positive results and sample quantitation limits associated with the low recovery outliers were qualified as estimated quantities (J or UJ).

5. Blanks: Satisfactory.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank except acetone (3.1 micrograms per kilogram [$\mu\text{g/kg}$]) and 4-methyl-2-pentanone (1.3 $\mu\text{g/kg}$) in the May 1, 2007 soil blank, acetone (2.1 $\mu\text{g/kg}$) and methylene chloride (2.6 $\mu\text{g/kg}$) in the May 2, 2007 (batch R017408) soil blank, methylene chloride (280 $\mu\text{g/kg}$) in the May 1, 2007 (batch R017522) soil blank, and acetone (3.4 $\mu\text{g/kg}$) in the May 8, 2007 soil blank. Associated sample results less than five times the blank results (10 times for the common laboratory contaminants methylene chloride and acetone) were qualified as not detected (U).

6. System Monitoring Compounds (SMCs): Satisfactory.

All SMC recoveries were within QC limits except one SMC in the matrix spike and matrix spike duplicate samples (no action was taken based on these outliers), one or more SMCs with high recoveries in samples 07040128 (and rerun), 07040135 (and spike), 07040126, 07040123, 07040115 (and rerun), 07040101 (and rerun), 07040112 dilution, 07040109, and 07040126 dilution (associated positive results were qualified as estimated quantities [J]), and one low SMC and one high SMC in samples 07040121, 07040112, 07040123 dilution, and 07040109 dilution (associated sample results were qualified as estimated quantities [J or UJ]).

7. Blank Spike (BS) and Matrix Spike (MS) Analysis: Satisfactory.

BS and MS analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All BS recoveries were within QC limits except dichlorodifluoromethane with a low recovery and cis-1,3-dichloropropane with a high recovery in the soil BS and cis-1,3-dichloropropene and o-xylene with high recoveries in the soil BS. Associated positive sample results for high recovery outliers were qualified as estimated quantities (J) and associated positive results and sample quantitation limits for low recovery outliers were qualified as estimated quantities (J or UJ). All MS recoveries were within QC limits except the water benzene MS (low recovery) in sample 07040135, dichlorodifluoromethane, chloromethane, and vinyl chloride in MS of sample 07040107 (all low recoveries, therefore associated sample results [sample 07040107] were qualified as estimated quantities [J or UJ]) and methylene chloride with a relative percent difference outlier (the methylene chloride result in sample 07040107 was qualified as an estimated quantity [J or UJ]).

8. Internal Standards: Satisfactory.

All internal standards were within ± 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts except the following with low area counts: chlorobenzene in sample 07040128 rerun, dichlorobenzene in the method blank (no action taken), the dilutions for samples 07040126, 07040121, and 07040123, the reruns for samples 07040101, 07040128, and 07040115, and samples 07040101, 07040109, and 07040115, and fluorobenzene in the rerun of sample 07040128 and the dilution of sample 07040126; and the following with high area counts: chlorobenzene in samples 07040109, 07040112, 07040121, and the dilutions of samples 07040109 and 07040123. Positive sample results associated with high area count outliers were qualified as estimated quantities (J). Positive sample results and sample quantitation limits associated with low area count outliers were qualified as estimated quantities (J or UJ).

9. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

10. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

11. Overall Assessment of Data for Use

Diluted results were hand-transcribed by the data reviewer onto the original Form I's.

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
- U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit
- UJ - The material was analyzed for but was not detected. The associated numerical value is the estimated sample quantitation limit.

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040111

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017320

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-001

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: M0501025.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. _____

Date/Time Analyzed: 05/01/2007 19:12

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	2.0	J
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	3.7	
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

MW
52807

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040111

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017320

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-001

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: M0501025.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. _____

Date/Time Analyzed: 05/01/2007 19:12

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

MV
5/28/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040136

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: RD17155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-002

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425016.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 12:56

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U J
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

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1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040136

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-002

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425016.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 12:56

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

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1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040137

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-003

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425017.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 13:21

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U J
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	2.8	J
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040137

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-003

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425017.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 13:21

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040138

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-004

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425018.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 13:46

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U J
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	3.2	J
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040138

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-004

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425018.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 13:46

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040139

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-005

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425019.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 14:10

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040139

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-005

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425019.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 14:10

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.4	
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040135

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-007

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425020.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 14:35

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

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1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040135

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-007

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425020.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 14:35

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

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1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040140

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-006

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425023.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 15:49

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U J
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethane	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-5	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040140

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-006

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425023.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 15:49

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	3.6	
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

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VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040141

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-008

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425021.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 15:00

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U J
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	1.6	J
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

MW
5807

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040141

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-008

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425021.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 15:00

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromofom	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

MW
5-28-07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040142

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-009

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425022.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 15:24

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

MW
5/28/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040142

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-009

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425022.D

Level: (LOW/MED) _____

Date Collected: 04/21/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 15:24

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

mw
528-07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040130

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-010

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: Y0425010.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 10:30

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	1.0	U
74-87-3	Chloromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
74-83-9	Bromomethane	1.0	U
75-00-3	Chloroethane	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
67-64-1	Acetone	5.0	U
75-15-0	Carbon disulfide	1.0	U
75-09-2	Methylene chloride	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	U
78-93-3	2-Butanone	5.0	U
67-66-3	Chloroform	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
71-43-2	Benzene	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
10061-01-	cis-1,3-Dichloropropene	1.0	U
108-10-1	4-Methyl-2-pentanone	5.0	U
108-88-3	Toluene	1.0	U
10061-02-	trans-1,3-Dichloropropene	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
591-78-6	2-Hexanone	5.0	U

MW
52807

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040130

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017155

Matrix: (SOIL/SED/WATER) Water

Lab Sample ID: IDA02-010

Sample wt/vol: 5.00 (g/mL) mL

Lab File ID: Y0425010.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. _____

Date/Time Analyzed: 04/25/2007 10:30

GC Column: DB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	1.0	U
108-90-7	Chlorobenzene	1.0	U
100-41-4	Ethylbenzene	1.0	U
179601-23	m,p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
100-42-5	Styrene	1.0	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U

Comments:

AMW
5/8/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040101

Lab Name: Laucks Testing Laboratories, Inc.
SDG No.: IDA02
Matrix: (SOIL/SED/WATER) Soil
Sample wt/vol: 5.14 (g/mL) gm
Level: (LOW/MED) _____
% Moisture: not dec. 10.4
GC Column: ZB-624 20m ID: 0.18 (mm)
Soil Extract Volume: _____ (uL)
Heated Purge: (Y/N) Y

Contract: _____
Run Sequence: R017229
Lab Sample ID: IDA02-011
Lab File ID: Y0426022.D
Date Collected: 04/16/2007
Date/Time Analyzed: 04/26/2007 16:42
Dilution Factor: 1.0
Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	3.3	U J
74-87-3	Chloromethane	3.3	U
75-01-4	Vinyl chloride	3.3	U
74-83-9	Bromomethane	3.3	U J
75-00-3	Chloroethane	3.3	U
75-69-4	Trichlorofluoromethane	3.3	U
75-35-4	1,1-Dichloroethene	3.3	U
67-64-1	Acetone	85	J <i>THU</i>
75-15-0	Carbon disulfide	3.3	U
75-09-2	Methylene chloride	3.3	U
156-60-5	trans-1,2-Dichloroethene	3.3	U
75-34-3	1,1-Dichloroethane	3.3	U
156-59-2	cis-1,2-Dichloroethene	3.3	U
78-93-3	2-Butanone	24	J
67-66-3	Chloroform	3.3	U
71-55-6	1,1,1-Trichloroethane	3.3	U
56-23-5	Carbon tetrachloride	3.3	U
71-43-2	Benzene	5.9	J
107-06-2	1,2-Dichloroethane	3.3	U
79-01-6	Trichloroethene	3.3	U
78-87-5	1,2-Dichloropropane	3.3	U
75-27-4	Bromodichloromethane	3.3	U
10061-01-	cis-1,3-Dichloropropene	3.3	U
108-10-1	4-Methyl-2-pentanone	11	U
108-88-3	Toluene	17	J
10061-02-	trans-1,3-Dichloropropene	3.3	U
79-00-5	1,1,2-Trichloroethane	3.3	U
127-18-4	Tetrachloroethene	3.3	U
591-78-6	2-Hexanone	6.0	J

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1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040101

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-011

Sample wt/vol: 5.14 (g/mL) gm

Lab File ID: Y0426022.D

Level: (LOW/MED) _____

Date Collected: 04/16/2007

% Moisture: not dec. 10.4

Date/Time Analyzed: 04/26/2007 16:42

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	3.3	U
108-90-7	Chlorobenzene	3.3	U
100-41-4	Ethylbenzene	2.7	J
179601-23	m,p-Xylene	7.1	J
95-47-6	o-Xylene	4.0	J
100-42-5	Styrene	2.8	J
75-25-2	Bromoform	3.3	U
79-34-5	1,1,2,2-Tetrachloroethane	3.3	U J

Comments:

MW
5280

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040103

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-012

Sample wt/vol: 5.76 (g/mL) gm

Lab File ID: Y0426023.D

Level: (LOW/MED) _____

Date Collected: 04/17/2007

% Moisture: not dec. 33.2

Date/Time Analyzed: 04/26/2007 17:08

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	3.9	U <i>J</i>
74-87-3	Chloromethane	3.9	U
75-01-4	Vinyl chloride	3.9	U
74-83-9	Bromomethane	3.9	U <i>J</i>
75-00-3	Chloroethane	3.9	U
75-69-4	Trichlorofluoromethane	3.9	U
75-35-4	1,1-Dichloroethene	3.9	U
67-64-1	Acetone	130	<i>BM</i>
75-15-0	Carbon disulfide	3.9	U
75-09-2	Methylene chloride	5.1	
156-60-5	trans-1,2-Dichloroethene	3.9	U
75-34-3	1,1-Dichloroethane	3.9	U
156-59-2	cis-1,2-Dichloroethene	3.9	U
78-93-3	2-Butanone	21	
67-66-3	Chloroform	3.9	U
71-55-6	1,1,1-Trichloroethane	3.9	U
56-23-5	Carbon tetrachloride	3.9	U
71-43-2	Benzene	3.9	U
107-06-2	1,2-Dichloroethane	3.9	U
79-01-6	Trichloroethene	3.9	U
78-87-5	1,2-Dichloropropane	3.9	U
75-27-4	Bromodichloromethane	3.9	U
10061-01-	cis-1,3-Dichloropropene	3.9	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	3.9	U
10061-02-	trans-1,3-Dichloropropene	3.9	U
79-00-5	1,1,2-Trichloroethane	3.9	U
127-18-4	Tetrachloroethene	3.9	U
591-78-6	2-Hexanone	13	U

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1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040103

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-012

Sample wt/vol: 5.76 (g/mL) gm

Lab File ID: Y0426023.D

Level: (LOW/MED) _____

Date Collected: 04/17/2007

% Moisture: not dec. 33.2

Date/Time Analyzed: 04/26/2007 17:08

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	3.9	U
108-90-7	Chlorobenzene	3.9	U
100-41-4	Ethylbenzene	3.8	J
179601-23	m,p-Xylene	7.8	U
95-47-6	o-Xylene	3.5	J
100-42-5	Styrene	3.9	U
75-25-2	Bromoform	3.9	U
79-34-5	1,1,2,2-Tetrachloroethane	3.9	U

Comments:

Handwritten signature and date:
5/28/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040107

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-013

Sample wt/vol: 5.68 (g/mL) gm

Lab File ID: Y0426024.D

Level: (LOW/MED) _____

Date Collected: 04/17/2007

% Moisture: not dec. 31.8

Date/Time Analyzed: 04/26/2007 17:33

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	3.9	U J
74-87-3	Chloromethane	3.9	U J
75-01-4	Vinyl chloride	3.9	U J
74-83-9	Bromomethane	3.9	U J
75-00-3	Chloroethane	3.9	U
75-69-4	Trichlorofluoromethane	3.9	U
75-35-4	1,1-Dichloroethene	3.9	U
67-64-1	Acetone	93	U <i>Wu</i>
75-15-0	Carbon disulfide	3.9	U
75-09-2	Methylene chloride	3.5	J
156-60-5	trans-1,2-Dichloroethene	3.9	U
75-34-3	1,1-Dichloroethane	3.9	U
156-59-2	cis-1,2-Dichloroethene	3.9	U
78-93-3	2-Butanone	17	
67-66-3	Chloroform	3.9	U
71-55-6	1,1,1-Trichloroethane	3.9	U
56-23-5	Carbon tetrachloride	3.9	U
71-43-2	Benzene	3.9	U
107-06-2	1,2-Dichloroethane	3.9	U
79-01-6	Trichloroethene	3.9	U
78-87-5	1,2-Dichloropropane	3.9	U
75-27-4	Bromodichloromethane	3.9	U
10061-01-	cis-1,3-Dichloropropene	3.9	U
108-10-1	4-Methyl-2-pentanone	13	U
108-88-3	Toluene	3.9	U
10061-02-	trans-1,3-Dichloropropene	3.9	U
79-00-5	1,1,2-Trichloroethane	3.9	U
127-18-4	Tetrachloroethene	3.9	U
591-78-6	2-Hexanone	13	U

Wu
5/28/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040107

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-013

Sample wt/vol: 5.68 (g/mL) gm

Lab File ID: Y0426024.D

Level: (LOW/MED) _____

Date Collected: 04/17/2007

% Moisture: not dec. 31.8

Date/Time Analyzed: 04/26/2007 17:33

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	3.9	U
108-90-7	Chlorobenzene	3.9	U
100-41-4	Ethylbenzene	3.9	U
179601-23	m,p-Xylene	7.7	U
95-47-6	o-Xylene	3.9	U
100-42-5	Styrene	3.9	U
75-25-2	Bromoform	3.9	U
79-34-5	1,1,2,2-Tetrachloroethane	3.9	U

Comments:

mw
5/8/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040109

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-014

Sample wt/vol: 5.88 (g/mL) gm

Lab File ID: Y0426025.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. 0.0

Date/Time Analyzed: 04/26/2007 17:59

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	2.6	U J
74-87-3	Chloromethane	2.6	U
75-01-4	Vinyl chloride	2.6	U
74-83-9	Bromomethane	2.6	U J
75-00-3	Chloroethane	2.6	U
75-69-4	Trichlorofluoromethane	2.6	U
75-35-4	1,1-Dichloroethene	2.6	U
67-64-1	Acetone	130 160	BMU
75-15-0	Carbon disulfide	3.1	
75-09-2	Methylene chloride	2.6	U
156-60-5	trans-1,2-Dichloroethane	2.6	U
75-34-3	1,1-Dichloroethane	2.6	U
156-59-2	cis-1,2-Dichloroethane	2.6	U
78-93-3	2-Butanone	29	
67-66-3	Chloroform	2.6	U
71-55-6	1,1,1-Trichloroethane	2.6	U
56-23-5	Carbon tetrachloride	2.6	U
71-43-2	Benzene	2.6	U
107-06-2	1,2-Dichloroethane	2.6	U
79-01-6	Trichloroethene	2.6	U
78-87-5	1,2-Dichloropropane	2.6	U
75-27-4	Bromodichloromethane	2.6	U
10061-01-	cis-1,3-Dichloropropene	2.6	U
108-10-1	4-Methyl-2-pentanone	8.5	U
108-88-3	Toluene	2.6	U
10061-02-	trans-1,3-Dichloropropene	2.6	U
79-00-5	1,1,2-Trichloroethane	2.6	U
127-18-4	Tetrachloroethene	2.6	U
591-78-6	2-Hexanone	8.5	U

MW
528-81

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040109

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-014

Sample wt/vol: 5.88 (g/mL) gm

Lab File ID: Y0426025.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. 0.0

Date/Time Analyzed: 04/26/2007 17:59

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	2.6	U
108-90-7	Chlorobenzene	2.6	U
100-41-4	Ethylbenzene	56	
179601-23	m,p-Xylene	6.4	
95-47-6	o-Xylene	2.6	U
100-42-5	Styrene	2.6	U
75-25-2	Bromoform	2.6	U
79-34-5	1,1,2,2-Tetrachloroethane	2.6	U

Comments:

MW
528-07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040112

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-015

Sample wt/vol: 5.84 (g/mL) gm

Lab File ID: Y0426026.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. 27.3

Date/Time Analyzed: 04/26/2007 18:25

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	3.5	U J
74-87-3	Chloromethane	3.5	U J
75-01-4	Vinyl chloride	3.5	U J
74-83-9	Bromomethane	3.5	U J
75-00-3	Chloroethane	3.5	U J
75-69-4	Trichlorofluoromethane	3.5	U J
75-35-4	1,1-Dichloroethene	3.5	U J
67-64-1	Acetone	4.50 <u>190</u>	J <u>4.50</u>
75-15-0	Carbon disulfide	2.3	J
75-09-2	Methylene chloride	3.5	U J
156-60-5	trans-1,2-Dichloroethene	3.5	U J
75-34-3	1,1-Dichloroethane	3.5	U J
156-59-2	cis-1,2-Dichloroethene	3.5	U J
78-93-3	2-Butanone	39	J
67-66-3	Chloroform	3.5	U J
71-55-6	1,1,1-Trichloroethane	3.5	U J
56-23-5	Carbon tetrachloride	3.5	U J
71-43-2	Benzene	3.5	U J
107-06-2	1,2-Dichloroethane	3.5	U J
79-01-6	Trichloroethene	3.5	U J
78-87-5	1,2-Dichloropropane	3.5	U J
75-27-4	Bromodichloromethane	3.5	U J
10061-01-	cis-1,3-Dichloropropene	3.5	U J
108-10-1	4-Methyl-2-pentanone	12	U J
108-88-3	Toluene	3.5	U J
10061-02-	trans-1,3-Dichloropropene	3.5	U J
79-00-5	1,1,2-Trichloroethane	3.5	U J
127-18-4	Tetrachloroethene	3.5	U J
591-78-6	2-Hexanone	12	U J

MW 52805

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040112

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-015

Sample wt/vol: 5.84 (g/mL) gm

Lab File ID: Y0426026.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. 27.3

Date/Time Analyzed: 04/26/2007 18:25

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	<u>Q</u>
124-48-1	Dibromochloromethane	3.5	U J
108-90-7	Chlorobenzene	13	J
100-41-4	Ethylbenzene	3.5	U J
179601-23	m,p-Xylene	7.1	U
95-47-6	o-Xylene	3.5	U
100-42-5	Styrene	3.5	U
75-25-2	Bromoform	3.5	U
79-34-5	1,1,2,2-Tetrachloroethane	3.5	U ✓

Comments:

mm
52807

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040115

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-016

Sample wt/vol: 6.10 (g/mL) gm

Lab File ID: Y0426027.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. 14.5

Date/Time Analyzed: 04/26/2007 18:50

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	2.9	U J
74-87-3	Chloromethane	2.9	U
75-01-4	Vinyl chloride	2.9	U
74-83-9	Bromomethane	2.9	U J
75-00-3	Chloroethane	2.9	U
75-69-4	Trichlorofluoromethane	2.9	U
75-35-4	1,1-Dichloroethene	2.9	U
67-64-1	Acetone	16	J TW
75-15-0	Carbon disulfide	2.9	U
75-09-2	Methylene chloride	2.9	U
156-60-5	trans-1,2-Dichloroethene	2.9	U
75-34-3	1,1-Dichloroethane	2.9	U
156-59-2	cis-1,2-Dichloroethene	2.9	U
78-93-3	2-Butanone	9.6	U
67-66-3	Chloroform	2.9	U
71-55-6	1,1,1-Trichloroethane	2.9	U
56-23-5	Carbon tetrachloride	2.9	U
71-43-2	Benzene	2.9	U
107-06-2	1,2-Dichloroethane	2.9	U
79-01-6	Trichloroethene	2.9	U
78-87-5	1,2-Dichloropropane	2.9	U
75-27-4	Bromodichloromethane	2.9	U
10061-01-	cis-1,3-Dichloropropene	2.9	U
108-10-1	4-Methyl-2-pentanone	9.6	U
108-88-3	Toluene	2.9	U
10061-02-	trans-1,3-Dichloropropene	2.9	U
79-00-5	1,1,2-Trichloroethane	2.9	U
127-18-4	Tetrachloroethene	2.9	U
591-78-6	2-Hexanone	9.6	U

MW
5280

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040115

Lab Name: Laucks Testing Laboratories, Inc.
SDG No.: IDA02
Matrix: (SOIL/SED/WATER) Soil
Sample wt/vol: 6.10 (g/mL) gm
Level: (LOW/MED) _____
% Moisture: not dec. 14.5
GC Column: ZB-624 20m ID: 0.18 (mm)
Soil Extract Volume: _____ (uL)
Heated Purge: (Y/N) Y

Contract: _____
Run Sequence: R017229
Lab Sample ID: IDA02-016
Lab File ID: Y0426027.D
Date Collected: 04/18/2007
Date/Time Analyzed: 04/26/2007 18:50
Dilution Factor: 1.0
Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	2.9	U
108-90-7	Chlorobenzene	2.9	U
100-41-4	Ethylbenzene	2.9	U
179601-23	m,p-Xylene	5.8	U
95-47-6	o-Xylene	2.9	U
100-42-5	Styrene	2.9	U
75-25-2	Bromoform	2.9	U
79-34-5	1,1,2,2-Tetrachloroethane	2.9	U <input checked="" type="checkbox"/>

Comments:

Handwritten: MW
5-28-07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040118

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-017

Sample wt/vol: 6.42 (g/mL) gm

Lab File ID: Y0426028.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. 24.7

Date/Time Analyzed: 04/26/2007 19:15

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	3.1	U <i>J</i>
74-87-3	Chloromethane	3.1	U
75-01-4	Vinyl chloride	3.1	U
74-83-9	Bromomethane	3.1	U <i>J</i>
75-00-3	Chloroethane	3.1	U
75-69-4	Trichlorofluoromethane	3.1	U
75-35-4	1,1-Dichloroethene	3.1	U
67-64-1	Acetone	6.1	<i>JW</i>
75-15-0	Carbon disulfide	3.1	U
75-09-2	Methylene chloride	3.1	U
156-60-5	trans-1,2-Dichloroethene	3.1	U
75-34-3	1,1-Dichloroethane	3.1	U
156-59-2	cis-1,2-Dichloroethene	3.1	U
78-93-3	2-Butanone	10	U
67-66-3	Chloroform	3.1	U
71-55-6	1,1,1-Trichloroethane	3.1	U
56-23-5	Carbon tetrachloride	3.1	U
71-43-2	Benzene	3.1	U
107-06-2	1,2-Dichloroethane	3.1	U
79-01-6	Trichloroethene	3.1	U
78-87-5	1,2-Dichloropropane	3.1	U
75-27-4	Bromodichloromethane	3.1	U
10061-01-	cis-1,3-Dichloropropene	3.1	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	3.1	U
10061-02-	trans-1,3-Dichloropropene	3.1	U
79-00-5	1,1,2-Trichloroethane	3.1	U
127-18-4	Tetrachloroethene	3.1	U
591-78-6	2-Hexanone	10	U

MW
5/28/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040118

Lab Name: Laucks Testing Laboratories, Inc.
SDG No.: IDA02
Matrix: (SOIL/SED/WATER) Soil
Sample wt/vol: 6.42 (g/mL) gm
Level: (LOW/MED) _____
% Moisture: not dec. 24.7
GC Column: ZB-624 20m ID: 0.18 (mm)
Soil Extract Volume: _____ (uL)
Heated Purge: (Y/N) Y

Contract: _____
Run Sequence: R017229
Lab Sample ID: IDA02-017
Lab File ID: Y0426028.D
Date Collected: 04/18/2007
Date/Time Analyzed: 04/26/2007 19:15
Dilution Factor: 1.0
Soil Aliquot Volume: _____ (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	3.1	U
108-90-7	Chlorobenzene	3.1	U
100-41-4	Ethylbenzene	3.1	U
179601-23	m,p-Xylene	6.2	U
95-47-6	o-Xylene	3.1	U
100-42-5	Styrene	3.1	U
75-25-2	Bromoform	3.1	U
79-34-5	1,1,2,2-Tetrachloroethane	3.1	U

Comments:

MM
528-07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040121

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-018

Sample wt/vol: 5.83 (g/mL) gm

Lab File ID: Y0426029.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. 23.6

Date/Time Analyzed: 04/26/2007 19:41

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	3.4	U
74-87-3	Chloromethane	3.4	U
75-01-4	Vinyl chloride	3.4	U
74-83-9	Bromomethane	3.4	U
75-00-3	Chloroethane	3.4	U
75-69-4	Trichlorofluoromethane	3.4	U
75-35-4	1,1-Dichloroethene	3.4	U
67-64-1	Acetone	120 230	J
75-15-0	Carbon disulfide	2.0	J
75-09-2	Methylene chloride	3.4	U
156-60-5	trans-1,2-Dichloroethene	3.4	U
75-34-3	1,1-Dichloroethane	3.4	U
156-59-2	cis-1,2-Dichloroethene	3.4	U
78-93-3	2-Butanone	31	J
67-66-3	Chloroform	3.4	U
71-55-6	1,1,1-Trichloroethane	3.4	U
56-23-5	Carbon tetrachloride	3.4	U
71-43-2	Benzene	3.4	U
107-06-2	1,2-Dichloroethane	3.4	U
79-01-6	Trichloroethene	3.4	U
78-87-5	1,2-Dichloropropane	3.4	U
75-27-4	Bromodichloromethane	3.4	U
10061-01-	cis-1,3-Dichloropropene	3.4	U
108-10-1	4-Methyl-2-pentanone	11	U
108-88-3	Toluene	3.4	U
10061-02-	trans-1,3-Dichloropropene	3.4	U
79-00-5	1,1,2-Trichloroethane	3.4	U
127-18-4	Tetrachloroethene	3.4	U
591-78-6	2-Hexanone	11	U

MW 5/2/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040121

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-018

Sample wt/vol: 5.83 (g/mL) gm

Lab File ID: Y0426029.D

Level: (LOW/MED) _____

Date Collected: 04/18/2007

% Moisture: not dec. 23.6

Date/Time Analyzed: 04/26/2007 19:41

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	3.4	U <u>J</u>
108-90-7	Chlorobenzene	13	U <u>J</u>
100-41-4	Ethylbenzene	3.4	U <u>J</u>
179601-23	m,p-Xylene	6.7	U <u>J</u>
95-47-6	o-Xylene	3.4	U <u>J</u>
100-42-5	Styrene	3.4	U <u>J</u>
75-25-2	Bromoform	3.4	U <u>J</u>
79-34-5	1,1,2,2-Tetrachloroethane	3.4	U <u>J</u>

Comments:

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040123

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-019

Sample wt/vol: 5.96 (g/mL) gm

Lab File ID: Y0426030.D

Level: (LOW/MED) _____

Date Collected: 04/19/2007

% Moisture: not dec. 26.2

Date/Time Analyzed: 04/26/2007 20:07

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	3.4	U <i>J</i>
74-87-3	Chloromethane	3.4	U
75-01-4	Vinyl chloride	3.4	U
74-83-9	Bromomethane	3.4	U <i>J</i>
75-00-3	Chloroethane	3.4	U
75-69-4	Trichlorofluoromethane	3.4	U
75-35-4	1,1-Dichloroethene	3.4	U
67-64-1	Acetone	3.4 <i>110</i>	<i>J</i>
75-15-0	Carbon disulfide	2.1	J
75-09-2	Methylene chloride	3.4	U
156-60-5	trans-1,2-Dichloroethene	3.4	U
75-34-3	1,1-Dichloroethane	3.4	U
156-59-2	cis-1,2-Dichloroethene	3.4	U
78-93-3	2-Butanone	26	<i>J</i>
67-66-3	Chloroform	3.4	U
71-55-6	1,1,1-Trichloroethane	3.4	U
56-23-5	Carbon tetrachloride	3.4	U
71-43-2	Benzene	3.4	U
107-06-2	1,2-Dichloroethane	3.4	U
79-01-6	Trichloroethene	3.4	U
78-87-5	1,2-Dichloropropane	3.4	U
75-27-4	Bromodichloromethane	3.4	U
10061-01-	cis-1,3-Dichloropropene	3.4	U
108-10-1	4-Methyl-2-pentanone	11	U
108-88-3	Toluene	3.4	U
10061-02-	trans-1,3-Dichloropropene	3.4	U
79-00-5	1,1,2-Trichloroethane	3.4	U
127-18-4	Tetrachloroethene	3.4	U
591-78-6	2-Hexanone	11	U

MW
5087

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040123

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-019

Sample wt/vol: 5.96 (g/mL) gm

Lab File ID: Y0426030.D

Level: (LOW/MED) _____

Date Collected: 04/19/2007

% Moisture: not dec. 26.2

Date/Time Analyzed: 04/26/2007 20:07

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	3.4	U
108-90-7	Chlorobenzene	31	J
100-41-4	Ethylbenzene	31 540	J/ENV
179601-23	m,p-Xylene	25	J
95-47-6	o-Xylene	15	J
100-42-5	Styrene	3.4	U
75-25-2	Bromoform	3.4	U
79-34-5	1,1,2,2-Tetrachloroethane	3.4	U

Comments:

Handwritten: M
5/2/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040126

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-020

Sample wt/vol: 5.58 (g/mL) gm

Lab File ID: Y0426031.D

Level: (LOW/MED) _____

Date Collected: 04/19/2007

% Moisture: not dec. 25.8

Date/Time Analyzed: 04/26/2007 20:32

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	3.6	U <i>J</i>
74-87-3	Chloromethane	3.6	U
75-01-4	Vinyl chloride	3.6	U
74-83-9	Bromomethane	3.6	U <i>J</i>
75-00-3	Chloroethane	3.6	U
75-69-4	Trichlorofluoromethane	3.6	U
75-35-4	1,1-Dichloroethene	3.6	U
67-64-1	Acetone	3.6 <i>150</i>	<i>J MW</i>
75-15-0	Carbon disulfide	3.6	U
75-09-2	Methylene chloride	7.9	<i>J</i>
156-60-5	trans-1,2-Dichloroethene	3.6	U
75-34-3	1,1-Dichloroethane	3.6	U
156-59-2	cis-1,2-Dichloroethene	3.6	U
78-93-3	2-Butanone	54	<i>J</i>
67-66-3	Chloroform	3.6	U
71-55-6	1,1,1-Trichloroethane	3.6	U
56-23-5	Carbon tetrachloride	3.6	U
71-43-2	Benzene	3.6	U
107-06-2	1,2-Dichloroethane	3.6	U
79-01-6	Trichloroethene	3.6	U
78-87-5	1,2-Dichloropropane	3.6	U
75-27-4	Bromodichloromethane	3.6	U
10061-01-	cis-1,3-Dichloropropene	3.6	U
108-10-1	4-Methyl-2-pentanone	12	U
108-88-3	Toluene	3.6	U
10061-02-	trans-1,3-Dichloropropene	3.6	U
79-00-5	1,1,2-Trichloroethane	3.6	U
127-18-4	Tetrachloroethene	3.6	U
591-78-6	2-Hexanone	12	U

MW
5/28/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040126

Lab Name: Lauck's Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-020

Sample wt/vol: 5.58 (g/mL) gm

Lab File ID: Y0426031.D

Level: (LOW/MED) _____

Date Collected: 04/19/2007

% Moisture: not dec. 25.8

Date/Time Analyzed: 04/26/2007 20:32

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	3.6	U
108-90-7	Chlorobenzene	3.6	U
100-41-4	Ethylbenzene	13	J
179601-23	m,p-Xylene	7.2	U
95-47-6	o-Xylene	7.8	J
100-42-5	Styrene	3.6	U
75-25-2	Bromoform	3.6	U
79-34-5	1,1,2,2-Tetrachloroethane	3.6	U

Comments:

MW
5/28/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040128

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-021

Sample wt/vol: 6.62 (g/mL) gm

Lab File ID: Y0426032.D

Level: (LOW/MED) _____

Date Collected: 04/19/2007

% Moisture: not dec. 16.5

Date/Time Analyzed: 04/26/2007 20:58

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
75-71-8	Dichlorodifluoromethane	2.7	U
74-87-3	Chloromethane	2.7	U
75-01-4	Vinyl chloride	2.7	U
74-83-9	Bromomethane	2.7	U
75-00-3	Chloroethane	2.7	U
75-69-4	Trichlorofluoromethane	2.7	U
75-35-4	1,1-Dichloroethene	2.7	U
67-64-1	Acetone	78	U
75-15-0	Carbon disulfide	2.7	U
75-09-2	Methylene chloride	2.7	U
156-60-5	trans-1,2-Dichloroethene	2.7	U
75-34-3	1,1-Dichloroethane	2.7	U
156-59-2	cis-1,2-Dichloroethene	2.7	U
78-93-3	2-Butanone	19	U
67-66-3	Chloroform	2.7	U
71-55-6	1,1,1-Trichloroethane	2.7	U
56-23-5	Carbon tetrachloride	2.7	U
71-43-2	Benzene	2.7	U
107-06-2	1,2-Dichloroethane	2.7	U
79-01-6	Trichloroethene	2.7	U
78-87-5	1,2-Dichloropropane	2.7	U
75-27-4	Bromodichloromethane	2.7	U
10061-01-	cis-1,3-Dichloropropene	2.7	U
108-10-1	4-Methyl-2-pentanone	9.0	U
108-88-3	Toluene	2.7	U
10061-02-	trans-1,3-Dichloropropene	2.7	U
79-00-5	1,1,2-Trichloroethane	2.7	U
127-18-4	Tetrachloroethene	2.7	U
591-78-6	2-Hexanone	9.0	U

MW
5/8/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040128

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017229

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-021

Sample wt/vol: 6.62 (g/mL) gm

Lab File ID: Y0426032.D

Level: (LOW/MED) _____

Date Collected: 04/19/2007

% Moisture: not dec. 16.5

Date/Time Analyzed: 04/26/2007 20:58

GC Column: ZB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Heated Purge: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/kg</u>	Q
124-48-1	Dibromochloromethane	2.7	U J
108-90-7	Chlorobenzene	2.7	U J
100-41-4	Ethylbenzene	1.8	U J
179601-23	m,p-Xylene	2.0	J
95-47-6	o-Xylene	4.1	J
100-42-5	Styrene	2.7	U J
75-25-2	Bromoform	2.7	U J
79-34-5	1,1,2,2-Tetrachloroethane	2.7	U J

Comments:

MW
5/8/07

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040131

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017481

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-037

Sample wt/vol: 1.00 (g/mL) mL

Lab File ID: M0507012.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. 0.0

Date/Time Analyzed: 05/07/2007 13:02

GC Column: 2B-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 25 (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
75-71-8	Dichlorodifluoromethane	2000	U
74-87-3	Chloromethane	2000	U
75-01-4	Vinyl chloride	2000	U
74-83-9	Bromomethane	2000	U
75-00-3	Chloroethane	2000	U
75-69-4	Trichlorofluoromethane	2000	U
75-35-4	1,1-Dichloroethene	2000	U
67-64-1	Acetone	10000	U
75-15-0	Carbon disulfide	2000	U
75-09-2	Methylene chloride	2700	U
156-60-5	trans-1,2-Dichloroethene	2000	U
75-34-3	1,1-Dichloroethane	2000	U
156-59-2	cis-1,2-Dichloroethene	2000	U
78-93-3	2-Butanone	10000	U
67-66-3	Chloroform	2000	U
71-55-6	1,1,1-Trichloroethane	2000	U
56-23-5	Carbon tetrachloride	2000	U
71-43-2	Benzene	2000	U
107-06-2	1,2-Dichloroethane	2000	U
79-01-6	Trichloroethene	2000	U
78-87-5	1,2-Dichloropropane	2000	U
75-27-4	Bromodichloromethane	1500	J
10061-01-	cis-1,3-Dichloropropene	2000	U
108-10-1	4-Methyl-2-pentanone	10000	U
108-88-3	Toluene	2000	U
10061-02-	trans-1,3-Dichloropropene	2000	U
79-00-5	1,1,2-Trichloroethane	2000	U
127-18-4	Tetrachloroethene	2000	U
591-78-6	2-Hexanone	10000	U

Handwritten signature/initials

1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040131

Lab Name: Laucks Testing Laboratories, Inc.

Contract: _____

SDG No.: IDA02

Run Sequence: R017481

Matrix: (SOIL/SED/WATER) Soil

Lab Sample ID: IDA02-037

Sample wt/vol: 1.00 (g/mL) mL

Lab File ID: M0507012.D

Level: (LOW/MED) _____

Date Collected: 04/20/2007

% Moisture: not dec. 0.0

Date/Time Analyzed: 05/07/2007 13:02

GC Column: EB-624 20m ID: 0.18 (mm)

Dilution Factor: 1.0

Soil Extract Volume: 10000 (uL)

Soil Aliquot Volume: 25 (uL)

Heated Purge: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>ug/L</u>	Q
124-48-1	Dibromochloromethane	2000	U
108-90-7	Chlorobenzene	1600	J
100-41-4	Ethylbenzene	2000	U
179601-23	m,p-Xylene	4000	U
95-47-6	o-Xylene	2000	U
100-42-5	Styrene	2000	U
75-25-2	Bromoform	2000	U
79-34-5	1,1,2,2-Tetrachloroethane	2000	U

Comments:

mw
5/8/07



ecology and environment, inc.

International Specialists in the Environment

720 Third Avenue, Suite 1700, Seattle, WA 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: May 24, 2007

TO: Steve Hall, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Quality Assurance Review, Avery Landing Site, Avery, Idaho**

REF: TDD: 07-03-0004 PAN: 002233.0193.01SF

The data quality assurance review of 15 solid, 1 waste, and 13 water samples collected from the Avery Landing site in Avery, Idaho, has been completed. Semivolatile Organic Compound (SVOC) analysis (EPA Method 8270) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered:

Solid	07040102	07040104	07040106	07040108	07040110
	07040114	07040116	07040117	07040119	07040120
	07040122	07040124	07040125	07040127	07040129
Waste	07040131				
Water	07040111	07040132	07040133	07040134	07040135
	07040136	07040137	07040138	07040139	07040140
	07040141	07040142	07040143		

Data Qualifications:

1. Sample Holding Times: Acceptable.

Sample receipt temperature was not provided; the laboratory narrative indicated that sample temperature was acceptable. The samples were collected between April 16 and 21, 2007, were extracted between April 24 and 26, 2007, and were analyzed by May 2, 2007, therefore meeting holding time criteria of less than 7 days between collection and extraction (14 days for soil and waste) and less than 40 days between extraction and analysis.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Satisfactory.

All average Relative Response Factors (RRFs) were greater than the QC limit of 0.050. All Relative Standard Deviations (RSDs) were less than the QC limit of 30% except benzoic acid, 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene in the April 12, 2007 calibration and benzoic acid, 2,4-dinitrophenol, 4-nitrophenol, and 4,6-dinitro-2-methylphenol in the May 3, 2007 calibration. Associated positive results were qualified as estimated quantities (J).

4. Continuing Calibration: Satisfactory.

All RRFs were greater than the QC limit of 0.050. All % differences were less than the QC limit of 25% except di-n-octylphthalate (increasing response factor) in the April 26, 2007 calibration, benzoic acid, 3-nitroaniline, 2,4-dinitrophenol, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol, and benzo(g,h,i)perylene (all with increasing response factors) in the April 27, 2007 calibration, 4-chloroaniline and 4-nitrophenol (both with decreasing response factors) in the May 1, 2007 calibration, 3,3'-dichlorobenzidine, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene (all with increasing response factors) in the May 2, 2007 calibration, and benzoic acid (decreasing response factor) and 4-nitroaniline (increasing response factor) in the May 3, 2007 calibration. Analytes associated with decreasing response factors were qualified as estimated quantities (J or UJ) and positive results for analytes associated with increasing response factors were qualified as estimated quantities (J).

5. Blanks: Satisfactory.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank except di-n-butylphthalate (7 µg/kg) and butyl benzyl phthalate (7.3 µg/kg) in the April 24, 2007 soil blank, di-n-butylphthalate (0.059 µg/L), butyl benzyl phthalate (0.082 µg/L), and bis(2-ethylhexyl)phthalate (0.16 µg/L) in the April 25, 2007 water blank, and di-n-butylphthalate (4,900 µg/kg) in the April 26, 2007 waste blank. Associated sample results less than 10 times the blank contamination for these common laboratory contaminants were qualified as not detected (U).

6. System Monitoring Compounds (SMCs): Satisfactory.

All SMC recoveries were within QC limits except 2,4,6-tribromophenol with a high recovery in samples 07040102, 07040104, 07040108, 07040116, and 07040124 (no action based on one outlier per fraction per sample), nitrobenzene and 2,4,6-tribromophenol with high recoveries in samples 07040110 and 07040122 (no action based on one outlier per fraction per sample), 2-fluorophenol, nitrobenzene, and 2,4,6-tribromophenol with high recoveries in sample 07040114 (positive acid-fraction results were qualified as estimated quantities [J]), 2-fluorophenol and phenol with low recoveries and 2,4,6-tribromophenol with a high recovery in sample 07040117 (all acid-fraction results were qualified as estimated quantities [J or UJ]), 2-fluorophenol, nitrobenzene, and 2,4,6-tribromophenol with high recoveries and 2-fluorophenol with a low recovery in sample 07040119 (all acid-fraction results and all positive base/neutral fraction results were qualified as estimated quantities [J or UJ]), 2,4,6-tribromophenol and phenol with 0% recoveries, 2-fluorobiphenyl with a low recovery and nitrobenzene with a high recovery in sample 07040120 (positive acid-fraction results were qualified as estimated quantities [J] and sample quantitation limits were rejected [R] and base/neutral fraction results were qualified as estimated quantities [J or UJ]), 2-fluorophenol and 2-fluorobiphenyl with low recoveries and nitrobenzene and 2,4,6-tribromophenol with high recoveries in sample 07040127 (all results were qualified as estimated quantities [J or UJ]), 2-fluorophenol with <10% recovery and nitrobenzene and 2,4,6-tribromophenol with high recoveries in sample 07040129 (positive acid-fraction results were qualified as estimated quantities [J] and sample quantitation limits were rejected [R]), phenol with <10% recovery in samples 07040136,

07040139, and 07040141 (positive acid-fraction results were qualified as estimated quantities [J] and sample quantitation limits were rejected [R]), 2-fluorophenol and phenol with <10% recoveries in sample 07040137 (positive acid-fraction results were qualified as estimated quantities [J] and sample quantitation limits were rejected [R]), and 2-fluorophenol and phenol with <10% recoveries and nitrobenzene with a high recovery in sample 07040140 (positive acid-fraction results were qualified as estimated quantities [J] and sample quantitation limits were rejected [R]).

7. Matrix Spike (MS)/MS Duplicate (MSD)/Blank Spike (BS)/BS Duplicate (BSD) Analysis: Satisfactory.

Spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except n-nitrosodiphenylamine and carbazole with low BS and BSD recoveries associated with the waste sample, isophorone and di-n-butylphthalate with high BS recoveries and 2,4-dinitrophenol with low BS and BSD recoveries associated with the solid samples, di-n-octylphthalate with a high BS recovery associated with the water samples, bis(2-chloroethyl)ether and di-n-octylphthalate with high MS recoveries and 4-nitrophenol with low MS and MSD recoveries (the MSD recovery was less than 10%) associated with sample 07040135, and 2-nitrophenol, 2,4-dichlorophenol, 4-chloro-3-methylphenol, 2-nitroaniline, 2,6-dinitrotoluene, 2,4-dinitrotoluene, pentachlorophenol, butyl benzyl phthalate, benzo(a)anthracene, bis(2-ethylhexyl)phthalate, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene (all with one or more high recoveries), hexachlorocyclopentadiene, 2,4,5-trichlorophenol, fluoranthene, and benzo(k)fluoranthene (all with one or more low recoveries), benzoic acid and 4,6-dinitro-2-methylphenol (one high recovery and one 0% recovery), hexachlorocyclopentadiene (two low recoveries), and 3,3'-dichlorobenzidine (two 0% recoveries) in the MS/MSD associated with sample 07040108. Associated positive sample results for analytes with high recoveries were qualified as estimated quantities (J), associated positive results and sample quantitation limits for analytes with low recoveries (but > 10%) were qualified as estimated quantities (J or UJ), and associated positive results were qualified as estimated quantities (J) and sample quantitation limits were rejected (R) for analytes with < 10% recovery.

8. Duplicate Analysis: Satisfactory.

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits except indeno(1,2,3-cd)pyrene associated with the waste sample and benzoic acid and 4,6-dinitro-2-methylphenol associated with sample 07040108. Associated sample results were qualified as estimated quantities (J or UJ).

9. Internal Standards: Satisfactory.

All internal standards (IS) were within ± 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts except chrysene and perylene (both with low recoveries) in sample 07040102, 1,4-dichlorobenzene and chrysene (both with low recoveries) in sample 07040119, and perylene with high recoveries in samples 07040122 (1:100 dilution) and 07040127 (1:100 dilution). Positive sample results and sample quantitation limits associated with the low area count outliers were qualified as estimated quantities (J or UJ). Positive sample results associated with high area count outliers were qualified as estimated quantities (J).

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
- R - The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.
- U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
- UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met.

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040102

Lab Sample ID: 580-5689-1

Client Matrix: Solid

% Moisture: 10.5

Date Sampled: 04/16/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009412.D

Dilution: 10

Initial Weight/Volume: 20.3507 g

Date Analyzed: 05/04/2007 0801

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		30	110
Bis(2-chloroethyl)ether		ND		33	110
2-Chlorophenol		ND		25	110
1,3-Dichlorobenzene		ND		13	55
1,4-Dichlorobenzene		ND		8.3	55
Benzyl alcohol		ND		33	110
1,2-Dichlorobenzene		ND		19	55
2-Methylphenol		ND		31	110
Bis(2-chloroisopropyl) ether		ND		37	160
3 & 4 Methylphenol		ND		58	220
N-Nitrosodi-n-propylamine		ND		29	110
Hexachloroethane		ND		23	110
Nitrobenzene		ND		16	110
Isophorone		ND	fmw	29	110
2-Nitrophenol		ND		25	110
2,4-Dimethylphenol		ND		21	110
Benzoic acid		ND		910	2700
Bis(2-chloroethoxy)methane		ND		27	110
2,4-Dichlorophenol		ND		21	110
1,2,4-Trichlorobenzene		ND		11	55
Naphthalene		ND		6.3	22
4-Chloroaniline		ND		30	110
Hexachlorobutadiene		ND		14	55
4-Chloro-3-methylphenol		ND		24	110
2-Methylnaphthalene		4.5	J	3.4	22
Hexachlorocyclopentadiene		ND		27	110
2,4,6-Trichlorophenol		ND		36	160
2,4,5-Trichlorophenol		ND		25	110
2-Chloronaphthalene		ND		2.1	22
2-Nitroaniline		ND		21	110
Dimethyl phthalate		ND		8.5	110
Acenaphthylene		ND		2.5	22
2,6-Dinitrotoluene		ND		21	110
3-Nitroaniline		ND		32	110
Acenaphthene		ND		6.3	22
2,4-Dinitrophenol		ND	fmw	230	1100
4-Nitrophenol		ND		290	1100
Dibenzofuran		ND		19	110
2,4-Dinitrotoluene		ND		15	110
Diethyl phthalate		ND		7.9	110
4-Chlorophenyl phenyl ether		ND		18	110
Fluorene		ND		2.9	22
4-Nitroaniline		ND		21	110

MV5-2407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040102

Lab Sample ID: 580-5689-1

Client Matrix: Solid

% Moisture: 10.5

Date Sampled: 04/16/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation: 3550B	Prep Batch: 580-17981	Lab File ID: ak009412.D
Dilution: 10		Initial Weight/Volume: 20.3507 g
Date Analyzed: 05/04/2007 0801		Final Weight/Volume: 2 mL
Date Prepared: 04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol		ND		300	1100
N-Nitrosodiphenylamine		ND		16	55
4-Bromophenyl phenyl ether		ND		11	110
Hexachlorobenzene		ND		12	55
Pentachlorophenol		ND		34	110
Phenanthrene		ND		4.4	22
Anthracene		14	J	4.7	22
Di-n-butyl phthalate		ND	thru	14	220
Fluoranthene		26		3.4	22
Pyrene		44		3.0	22
Butyl benzyl phthalate		38	UJ thru	32	110
3,3'-Dichlorobenzidine		ND		10	220
Benzo[a]anthracene		ND		7.1	27
Chrysene		ND		8.2	27
Bis(2-ethylhexyl) phthalate		ND		260	1600
Di-n-octyl phthalate		ND		36	220
Benzo[a]pyrene		ND		9.3	33
Indeno[1,2,3-cd]pyrene		ND		13	44
Dibenz(a,h)anthracene		ND		13	44
Benzo[g,h,i]perylene		ND		8.0	27
Carbazole		ND		36	160
1-Methylnaphthalene		ND		9.6	33
Benzo[b]fluoranthene		ND		5.9	22
Benzo[k]fluoranthene		ND		7.6	27
Surrogate		%Rec		Acceptance Limits	
2-Fluorophenol		57		36 - 145	
Phenol-d5		64		38 - 149	
Nitrobenzene-d5		84		38 - 141	
2-Fluorobiphenyl		64		42 - 140	
2,4,6-Tribromophenol		162	XI	28 - 143	
Terphenyl-d14		100		42 - 151	

RAW
5/24/07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040104

Lab Sample ID: 580-5689-2

Date Sampled: 04/17/2007 0000

Client Matrix: Solid

% Moisture: 16.4

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009340.D
Dilution:	10		Initial Weight/Volume: 20.2264 g
Date Analyzed:	05/01/2007 1840		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		32	120
Bis(2-chloroethyl)ether		ND		35	120
2-Chlorophenol		ND		27	120
1,3-Dichlorobenzene		ND		14	59
1,4-Dichlorobenzene		ND		9.0	59
Benzyl alcohol		ND		35	120
1,2-Dichlorobenzene		ND		20	59
2-Methylphenol		ND		33	120
Bis(2-chloroisopropyl) ether		ND		40	180
3 & 4 Methylphenol		ND		63	240
N-Nitrosodi-n-propylamine		ND		31	120
Hexachloroethane		ND		25	120
Nitrobenzene		ND		18	120
Isophorone		ND		31	120
2-Nitrophenol		ND		27	120
2,4-Dimethylphenol		ND		22	120
Benzoic acid		ND		980	3000
Bis(2-chloroethoxy)methane		ND		30	120
2,4-Dichlorophenol		ND		22	120
1,2,4-Trichlorobenzene		ND		12	59
Naphthalene		81		6.7	24
4-Chloroaniline		ND		32	120
Hexachlorobutadiene		ND		15	59
4-Chloro-3-methylphenol		ND		26	120
2-Methylnaphthalene		210		3.7	24
Hexachlorocyclopentadiene		ND		30	120
2,4,6-Trichlorophenol		ND		39	180
2,4,5-Trichlorophenol		ND		27	120
2-Chloronaphthalene		ND		2.2	24
2-Nitroaniline		ND		22	120
Dimethyl phthalate		ND		9.1	120
Acenaphthylene		ND		2.7	24
2,6-Dinitrotoluene		ND		22	120
3-Nitroaniline		ND		34	120
Acenaphthene		160		6.7	24
2,4-Dinitrophenol		ND		240	1200
4-Nitrophenol		ND		310	1200
Dibenzofuran		ND		20	120
2,4-Dinitrotoluene		ND		17	120
Diethyl phthalate		ND		8.5	120
4-Chlorophenyl phenyl ether		ND		19	120
Fluorene		180		3.1	24
4-Nitroaniline		ND		22	120

MW 5240

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040104

Lab Sample ID: 580-5689-2

Client Matrix: Solid

% Moisture: 16.4

Date Sampled: 04/17/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009340.D
Dilution:	10		Initial Weight/Volume: 20.2264 g
Date Analyzed:	05/01/2007 1840		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol		ND		320	1200
N-Nitrosodiphenylamine		ND		18	59
4-Bromophenyl phenyl ether		ND		12	120
Hexachlorobenzene		ND		13	59
Pentachlorophenol		ND		37	120
Phenanthrene		420		4.7	24
Anthracene		91		5.1	24
Di-n-butyl phthalate		69	J	15	240
Fluoranthene		65		3.7	24
Pyrene		370		3.2	24
Butyl benzyl phthalate		ND		34	120
3,3'-Dichlorobenzidine		ND		11	240
Benzo[a]anthracene		120		7.7	30
Chrysene		180		8.9	30
Bis(2-ethylhexyl) phthalate		ND		280	1800
Di-n-octyl phthalate		ND		39	240
Benzo[a]pyrene		85		10	35
Indeno[1,2,3-cd]pyrene		51	J	14	47
Dibenz(a,h)anthracene		ND		14	47
Benzo[g,h,i]perylene		57		8.6	30
Carbazole		ND		39	180
1-Methylnaphthalene		400		10	35
Benzo[b]fluoranthene		52		6.4	24
Benzo[k]fluoranthene		ND		8.2	30

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	55	36 - 145
Phenol-d5	55	38 - 149
Nitrobenzene-d5	99	38 - 141
2-Fluorobiphenyl	86	42 - 140
2,4,6-Tribromophenol	199	28 - 143
Terphenyl-d14	78	42 - 151

MW
52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040106

Lab Sample ID: 580-5689-4

Client Matrix: Solid

% Moisture: 27.3

Date Sampled: 04/17/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009341.D

Dilution: 1.0

Initial Weight/Volume: 20.0015 g

Date Analyzed: 05/01/2007 1907

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		3.7	14
Bis(2-chloroethyl)ether		ND		4.1	14
2-Chlorophenol		ND		3.2	14
1,3-Dichlorobenzene		ND		1.6	6.9
1,4-Dichlorobenzene		ND		1.0	6.9
Benzyl alcohol		ND		4.1	14
1,2-Dichlorobenzene		ND		2.3	6.9
2-Methylphenol		ND		3.8	14
Bis(2-chloroisopropyl) ether		ND		4.7	21
3 & 4 Methylphenol		ND		7.3	27
N-Nitrosodi-n-propylamine		ND		3.6	14
Hexachloroethane		ND		2.9	14
Nitrobenzene		ND		2.1	14
Isophorone		ND		3.6	14
2-Nitrophenol		ND		3.2	14
2,4-Dimethylphenol		ND		2.6	14
Benzoic acid		ND		110	340
Bis(2-chloroethoxy)methane		ND		3.4	14
2,4-Dichlorophenol		ND		2.6	14
1,2,4-Trichlorobenzene		ND		1.4	6.9
Naphthalene		ND		0.78	2.7
4-Chloroaniline		ND		3.7	14
Hexachlorobutadiene		ND		1.8	6.9
4-Chloro-3-methylphenol		ND		3.0	14
2-Methylnaphthalene		ND		0.43	2.7
Hexachlorocyclopentadiene		ND		3.4	14
2,4,6-Trichlorophenol		ND		4.5	21
2,4,5-Trichlorophenol		ND		3.2	14
2-Chloronaphthalene		ND		0.26	2.7
2-Nitroaniline		ND		2.6	14
Dimethyl phthalate		2.1	J	1.1	14
Acenaphthylene		ND		0.32	2.7
2,6-Dinitrotoluene		ND		2.6	14
3-Nitroaniline		ND		4.0	14
Acenaphthene		6.3		0.78	2.7
2,4-Dinitrophenol		ND		28	140
4-Nitrophenol		ND		36	140
Dibenzofuran		ND		2.3	14
2,4-Dinitrotoluene		ND		1.9	14
Diethyl phthalate		1.9	J	0.99	14
4-Chlorophenyl phenyl ether		ND		2.2	14
Fluorene		9.7		0.36	2.7
4-Nitroaniline		ND		2.6	14

MW 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040106

Lab Sample ID: 580-5689-4

Client Matrix: Solid

% Moisture: 27.3

Date Sampled: 04/17/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18161	Instrument ID:	SEA040
Preparation:	3550B	Prep Batch:	580-17981	Lab File ID:	ak009341.D
Dilution:	1.0			Initial Weight/Volume:	20.0015 g
Date Analyzed:	05/01/2007 1907			Final Weight/Volume:	2 mL
Date Prepared:	04/24/2007 0833			Injection Volume:	

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol		ND		37	140 U
N-Nitrosodiphenylamine		ND		2.1	6.9
4-Bromophenyl phenyl ether		ND		1.4	14
Hexachlorobenzene		ND		1.5	6.9
Pentachlorophenol		ND		4.3	14
Phenanthrene		1.3	J	0.55	2.7
Anthracene		ND		0.59	2.7 U
Di-n-butyl phthalate		9.8 U	J LM	1.8	27
Fluoranthene		ND		0.43	2.7 U
Pyrene		ND		0.37	2.7
Butyl benzyl phthalate		ND		4.0	14
3,3'-Dichlorobenzidine		ND		1.3	27
Benzo[a]anthracene		ND		0.89	3.4
Chrysene		ND		1.0	3.4
Bis(2-ethylhexyl) phthalate		44	J	33	210
Di-n-octyl phthalate		ND		4.5	27 U
Benzo[a]pyrene		ND		1.2	4.1
Indeno[1,2,3-cd]pyrene		ND		1.6	5.5
Dibenz(a,h)anthracene		ND		1.6	5.5
Benzo[g,h,i]perylene		ND		1.0	3.4
Carbazole		ND		4.5	21
1-Methylnaphthalene		ND		1.2	4.1
Benzo[b]fluoranthene		ND		0.74	2.7
Benzo[k]fluoranthene		ND		0.95	3.4

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	65	36 - 145
Phenol-d5	70	38 - 149
Nitrobenzene-d5	59	38 - 141
2-Fluorobiphenyl	59	42 - 140
2,4,6-Tribromophenol	66	28 - 143
Terphenyl-d14	89	42 - 151

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 MN
 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040108

Lab Sample ID: 580-5689-5

Date Sampled: 04/17/2007 0000

Client Matrix: Solid

% Moisture: 10.3

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009359.D

Dilution: 10

Initial Weight/Volume: 20.5634 g

Date Analyzed: 05/02/2007 1455

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		29	110
Bis(2-chloroethyl)ether		ND		33	110
2-Chlorophenol		ND		25	110
1,3-Dichlorobenzene		ND		13	54
1,4-Dichlorobenzene		ND		8.2	54
Benzyl alcohol		ND		33	110
1,2-Dichlorobenzene		ND		18	54
2-Methylphenol		ND		30	110
Bis(2-chloroisopropyl) ether		ND		37	160
3 & 4 Methylphenol		ND		57	220
N-Nitrosodi-n-propylamine		ND		28	110
Hexachloroethane		ND		23	110
Nitrobenzene		ND		16	110
Isophorone		ND		28	110
2-Nitrophenol		ND		25	110
2,4-Dimethylphenol		ND		21	110
Benzoic acid		ND		900	2700
Bis(2-chloroethoxy)methane		ND		27	110
2,4-Dichlorophenol		ND		21	110
1,2,4-Trichlorobenzene		ND		11	54
Naphthalene		19	J	6.2	22
4-Chloroaniline		ND		29	110
Hexachlorobutadiene		ND		14	54
4-Chloro-3-methylphenol		ND		24	110
2-Methylnaphthalene		36		3.4	22
Hexachlorocyclopentadiene		ND		27	110
2,4,6-Trichlorophenol		ND		36	160
2,4,5-Trichlorophenol		ND		25	110
2-Chloronaphthalene		ND		2.1	22
2-Nitroaniline		ND		21	110
Dimethyl phthalate		ND		8.3	110
Acenaphthylene		5.7	J	2.5	22
2,6-Dinitrotoluene		ND		21	110
3-Nitroaniline		ND		31	110
Acenaphthene		ND		6.2	22
2,4-Dinitrophenol		ND		220	1100
4-Nitrophenol		ND		280	1100
Dibenzofuran		ND		18	110
2,4-Dinitrotoluene		ND		15	110
Diethyl phthalate		8.0	J	7.8	110
4-Chlorophenyl phenyl ether		ND		17	110
Fluorene		ND		2.8	22
4-Nitroaniline		ND		21	110

MW5247

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040108

Lab Sample ID: 580-5689-5

Client Matrix: Solid

% Moisture: 10.3

Date Sampled: 04/17/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18161	Instrument ID:	SEA040
Preparation:	3550B	Prep Batch:	580-17981	Lab File ID:	ak009359.D
Dilution:	10			Initial Weight/Volume:	20.5634 g
Date Analyzed:	05/02/2007 1455			Final Weight/Volume:	2 mL
Date Prepared:	04/24/2007 0833			Injection Volume:	

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	R	ND		290	1100 <i>km</i>
N-Nitrosodiphenylamine		ND		16	54
4-Bromophenyl phenyl ether		ND		11	110
Hexachlorobenzene		ND		12	54
Pentachlorophenol		ND		34	110
Phenanthrene		43		4.3	22
Anthracene		7.1	J	4.7	22
Di-n-butyl phthalate		74	<i>J</i> <i>km</i>	14	220
Fluoranthene		61		3.4	22
Pyrene		65		2.9	22
Butyl benzyl phthalate		ND		31	110
3,3'-Dichlorobenzidine	R	ND		0.9	220 <i>km</i>
Benzo[a]anthracene		38	J	7.0	27
Chrysene		48		8.1	27
Bis(2-ethylhexyl) phthalate		ND		260	1600 <i>U</i>
Di-n-octyl phthalate		ND		36	220 <i>U</i>
Benzo[a]pyrene		58		9.2	33
Indeno[1,2,3-cd]pyrene		75	J	13	43
Dibenz(a,h)anthracene		36	<i>J</i> <i>km</i>	13	43
Benzo[g,h,i]perylene		59		7.9	27
Carbazole		ND		36	160 <i>U</i>
1-Methylnaphthalene		19	J	9.4	33
Benzo[b]fluoranthene		59		5.9	22
Benzo[k]fluoranthene		27	J	7.5	27

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	40	36 - 145
Phenol-d5	39	38 - 149
Nitrobenzene-d5	50	38 - 141
2-Fluorobiphenyl	59	42 - 140
2,4,6-Tribromophenol	217	28 - 143
Terphenyl-d14	88	42 - 151

km
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040110

Lab Sample ID: 580-5689-6

Client Matrix: Solid

% Moisture: 22.7

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009346.D
Dilution:	10		Initial Weight/Volume: 20.6574 g
Date Analyzed:	05/01/2007 2125		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		34	130
Bis(2-chloroethyl)ether		ND		38	130
2-Chlorophenol		ND		29	130
1,3-Dichlorobenzene		ND		15	63
1,4-Dichlorobenzene		ND		9.5	63
Benzyl alcohol		ND		38	130
1,2-Dichlorobenzene		ND		21	63
2-Methylphenol		ND		35	130
Bis(2-chloroisopropyl) ether		ND		43	190
3 & 4 Methylphenol		ND		66	250
N-Nitrosodi-n-propylamine		ND		33	130
Hexachloroethane		ND		26	130
Nitrobenzene		ND		19	130
Isophorone		ND		33	130
2-Nitrophenol		ND		29	130
2,4-Dimethylphenol		ND		24	130
Benzoic acid		ND		1000	3100
Bis(2-chloroethoxy)methane		77	J	31	130
2,4-Dichlorophenol		ND		24	130
1,2,4-Trichlorobenzene		ND		12	63
Naphthalene		3600		7.1	25
4-Chloroaniline		ND		34	130
Hexachlorobutadiene		ND		16	63
4-Chloro-3-methylphenol		ND		28	130
Hexachlorocyclopentadiene		ND		31	130
2,4,6-Trichlorophenol		ND		41	190
2,4,5-Trichlorophenol		ND		29	130
2-Chloronaphthalene		ND		2.4	25
2-Nitroaniline		ND		24	130
Dimethyl phthalate		ND		9.6	130
Acenaphthylene		ND		2.9	25
2,6-Dinitrotoluene		ND		24	130
3-Nitroaniline		ND		36	130
Acenaphthene		1500		7.1	25
2,4-Dinitrophenol		ND		260	1300
4-Nitrophenol		ND		330	1300
Dibenzofuran		ND		21	130
2,4-Dinitrotoluene		ND		18	130
Diethyl phthalate		ND		9.0	130
4-Chlorophenyl phenyl ether		ND		20	130
Fluorene		2800		3.3	25
4-Nitroaniline		ND		24	130
4,6-Dinitro-2-methylphenol		ND		340	1300

MW 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040110

Lab Sample ID: 580-5689-6

Date Sampled: 04/18/2007 0000

Client Matrix: Solid

% Moisture: 22.7

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009346.D

Dilution: 10

Initial Weight/Volume: 20.6574 g

Date Analyzed: 05/01/2007 2125

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
N-Nitrosodiphenylamine		ND		19	63
4-Bromophenyl phenyl ether		ND		13	130
Hexachlorobenzene		ND		14	63
Pentachlorophenol		ND		39	130
Phenanthrene		5800		5.0	25
Anthracene		700		5.4	25
Di-n-butyl phthalate		ND	Am	16	250
Fluoranthene		460		3.9	25
Pyrene		840		3.4	25
Butyl benzyl phthalate		ND		36	130
3,3'-Dichlorobenzidine		ND		11	250
Benzo[a]anthracene		210		8.1	31
Chrysene		360		9.4	31
Bis(2-ethylhexyl) phthalate		ND		300	1900
Di-n-octyl phthalate		ND		41	250
Benzo[a]pyrene		110		11	38
Indeno[1,2,3-cd]pyrene		ND		15	50
Dibenz(a,h)anthracene		ND		15	50
Benzo[g,h,i]perylene		57		9.1	31
Carbazole		ND		41	190
Benzo[b]fluoranthene		110		6.8	25
Benzo[k]fluoranthene		ND		8.6	31

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	56	36 - 145
Phenol-d5	85	38 - 149
Nitrobenzene-d5	566	38 - 141
2-Fluorobiphenyl	105	42 - 140
2,4,6-Tribromophenol	193	28 - 143
Terphenyl-d14	105	42 - 151

MMV
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040110

Lab Sample ID: 580-5689-6

Client Matrix: Solid

% Moisture: 22.7

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009360.D

Dilution: 100

Initial Weight/Volume: 20.6574 g

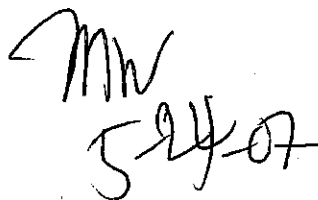
Date Analyzed: 05/02/2007 1522

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylnaphthalene		23000		39	250
1-Methylnaphthalene		16000		110	380



Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040111

Lab Sample ID: 580-5689-7

Client Matrix: Water

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch:	580-18063	Lab File ID:	ak009226.D
Dilution:	1.0			Initial Weight/Volume:	905 mL
Date Analyzed:	04/26/2007 1635			Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0082	0.33
Bis(2-chloroethyl)ether	ND		0.020	0.22
2-Chlorophenol	ND		0.024	0.22
1,3-Dichlorobenzene	ND		0.012	0.22
1,4-Dichlorobenzene	ND		0.013	0.22
Benzyl alcohol	0.015	J	0.014	0.22
1,2-Dichlorobenzene	ND		0.012	0.22
2-Methylphenol	ND		0.042	0.22
Bis(2-chloroisopropyl) ether	ND		0.0097	0.22
3 & 4 Methylphenol	ND		0.019	0.44
N-Nitrosodi-n-propylamine	ND		0.022	0.22
Hexachloroethane	ND		0.014	0.33
Nitrobenzene	ND		0.0083	0.22
Isophorone	ND		0.012	0.22
2-Nitrophenol	ND		0.023	0.22
2,4-Dimethylphenol	ND		0.020	1.1
Benzoic acid	ND		0.023	1.1
Bis(2-chloroethoxy)methane	ND		0.010	0.22
2,4-Dichlorophenol	ND		0.014	0.22
1,2,4-Trichlorobenzene	ND		0.011	0.22
Naphthalene	0.0079	J	0.0015	0.22
4-Chloroaniline	ND		0.021	0.22
Hexachlorobutadiene	ND		0.018	0.33
4-Chloro-3-methylphenol	ND		0.015	0.22
2-Methylnaphthalene	0.016	J	0.0061	0.11
Hexachlorocyclopentadiene	ND		0.013	1.1
2,4,6-Trichlorophenol	ND		0.011	0.33
2,4,5-Trichlorophenol	ND		0.0094	0.22
2-Chloronaphthalene	ND		0.0033	0.033
2-Nitroaniline	ND		0.012	0.22
Dimethyl phthalate	0.029	J	0.013	0.22
Acenaphthylene	ND		0.0029	0.044
2,6-Dinitrotoluene	ND		0.015	0.22
3-Nitroaniline	ND		0.062	0.22
Acenaphthene	ND		0.0013	0.055
2,4-Dinitrophenol	ND		0.064	2.8
4-Nitrophenol	ND		0.18	1.1
Dibenzofuran	ND		0.011	0.22
2,4-Dinitrotoluene	ND		0.013	0.22
Diethyl phthalate	0.060	J	0.010	0.22
4-Chlorophenyl phenyl ether	ND		0.013	0.22
Fluorene	0.0076	J	0.0046	0.033
4-Nitroaniline	ND		0.020	0.33

MW524A

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040111

Lab Sample ID: 580-5689-7

Client Matrix: Water

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch:	580-18063	Lab File ID:	ak009226.D
Dilution:	1.0			Initial Weight/Volume:	905 mL
Date Analyzed:	04/26/2007 1635			Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.059	2.2
N-Nitrosodiphenylamine	ND		0.014	0.22
4-Bromophenyl phenyl ether	ND		0.011	0.22
Hexachlorobenzene	ND		0.0091	0.22
Pentachlorophenol	ND		0.014	0.39
Phenanthrene	0.0093	J	0.0027	0.044
Anthracene	ND		0.0021	0.022
Di-n-butyl phthalate	0.16 <i>mm</i>	J B	0.0097	0.22
Fluoranthene	ND		0.0030	0.028
Pyrene	ND		0.0022	0.033
Butyl benzyl phthalate	0.14 <i>mm</i>	J B	0.027	0.33
3,3'-Dichlorobenzidine	ND		0.18	1.1
Benzo[a]anthracene	ND		0.0036	0.033
Chrysene	ND		0.0050	0.022
Bis(2-ethylhexyl) phthalate	0.33 <i>mm</i>	J B	0.035	1.7
Di-n-octyl phthalate	ND		0.020	0.22
Benzo[a]pyrene	ND		0.0030	0.022
Indeno[1,2,3-cd]pyrene	ND		0.0056	0.033
Dibenz(a,h)anthracene	ND		0.0051	0.033
Benzo[g,h,i]perylene	ND		0.0066	0.033
Carbazole	ND		0.0099	0.22
1-Methylnaphthalene	0.012	J	0.0057	0.033
Benzo[b]fluoranthene	ND		0.0051	0.044
Benzo[k]fluoranthene	ND		0.0061	0.033

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	35	10 - 120
Phenol-d5	21	10 - 102
Nitrobenzene-d5	77	34 - 146
2-Fluorobiphenyl	71	35 - 143
2,4,6-Tribromophenol	71	29 - 151
Terphenyl-d14	83	35 - 166

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040114

Lab Sample ID: 580-5689-9

Client Matrix: Solid

% Moisture: 27.0

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009347.D
Dilution:	10		Initial Weight/Volume: 20.8465 g
Date Analyzed:	05/01/2007 2152		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		35	130
Bis(2-chloroethyl)ether		ND		39	130
2-Chlorophenol		ND		30	130
1,3-Dichlorobenzene		ND		16	66
1,4-Dichlorobenzene		ND		10	66
Benzyl alcohol		ND		39	130
1,2-Dichlorobenzene		ND		22	66
2-Methylphenol		ND		37	130
Bis(2-chloroisopropyl) ether		ND		45	200
3 & 4 Methylphenol		ND		70	260
N-Nitrosodi-n-propylamine		ND		34	130
Hexachloroethane		ND		28	130
Nitrobenzene		ND		20	130
Isophorone		ND	mm	34	130
2-Nitrophenol		ND		30	130
2,4-Dimethylphenol		ND		25	130
Benzoic acid		ND		1100	3300
Bis(2-chloroethoxy)methane		ND		33	130
2,4-Dichlorophenol		ND		25	130
1,2,4-Trichlorobenzene		ND		13	66
Naphthalene		4700		7.5	26
4-Chloroaniline		ND		35	130
Hexachlorobutadiene		ND		17	66
4-Chloro-3-methylphenol		ND		29	130
Hexachlorocyclopentadiene		ND		33	130
2,4,6-Trichlorophenol		ND		43	200
2,4,5-Trichlorophenol		ND		30	130
2-Chloronaphthalene		ND		2.5	26
2-Nitroaniline		ND		25	130
Dimethyl phthalate		ND		10	130
Acenaphthylene		ND		3.0	26
2,6-Dinitrotoluene		ND		25	130
3-Nitroaniline		ND		38	130
Acenaphthene		3200		7.5	26
2,4-Dinitrophenol		ND	mm	270	1300
4-Nitrophenol		ND		340	1300
Dibenzofuran		ND		22	130
2,4-Dinitrotoluene		ND		18	130
Diethyl phthalate		ND		9.5	130
4-Chlorophenyl phenyl ether		ND		21	130
Fluorene		4900		3.4	26
4-Nitroaniline		ND		25	130
4,6-Dinitro-2-methylphenol		ND		350	1300

mm 52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040114

Lab Sample ID: 580-5689-9

Client Matrix: Solid

% Moisture: 27.0

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009347.D
Dilution:	10		Initial Weight/Volume: 20.8465 g
Date Analyzed:	05/01/2007 2152		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
N-Nitrosodiphenylamine		ND		20	66
4-Bromophenyl phenyl ether		ND		13	130
Hexachlorobenzene		ND		14	66
Pentachlorophenol		ND		41	130
Phenanthrene		3800		5.3	26
Anthracene		250		5.6	26
Di-n-butyl phthalate		ND		17	260
Fluoranthene		99		4.1	26
Pyrene		240		3.5	26
Butyl benzyl phthalate		ND		38	130
3,3'-Dichlorobenzidine		ND		12	260
Benzo[a]anthracene		53		8.5	33
Chrysene		120		9.9	33
Bis(2-ethylhexyl) phthalate		ND		320	2000
Di-n-octyl phthalate		ND		43	260
Benzo[a]pyrene		ND		11	39
Indeno[1,2,3-cd]pyrene		ND		16	53
Dibenz(a,h)anthracene		ND		16	53
Benzo[g,h,i]perylene		ND		9.6	33
Carbazole		ND		43	200
Benzo[b]fluoranthene		ND		7.1	26
Benzo[k]fluoranthene		ND		9.1	33
Surrogate	%Rec			Acceptance Limits	
2-Fluorophenol	277		X I	36 - 145	
Phenol-d5	67			38 - 149	
Nitrobenzene-d5	1490		X I	38 - 141	
2-Fluorobiphenyl	140			42 - 140	
2,4,6-Tribromophenol	186		X I	28 - 143	
Terphenyl-d14	94			42 - 151	

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040114

Lab Sample ID: 580-5689-9

Client Matrix: Solid

% Moisture: 27.0

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009361.D

Dilution: 100

Initial Weight/Volume: 20.8465 g

Date Analyzed: 05/02/2007 1549

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylnaphthalene		44000		41	260
1-Methylnaphthalene		30000		110	390

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040116

Lab Sample ID: 580-5689-10

Client Matrix: Solid

% Moisture: 12.0

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009348.D

Dilution: 10

Initial Weight/Volume: 20.3703 g

Date Analyzed: 05/01/2007 2220

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		30	110
Bis(2-chloroethyl)ether		ND		33	110
2-Chlorophenol		ND		26	110
1,3-Dichlorobenzene		ND		13	56
1,4-Dichlorobenzene		ND		8.5	56
Benzyl alcohol		ND		33	110
1,2-Dichlorobenzene		ND		19	56
2-Methylphenol		ND		31	110
Bis(2-chloroisopropyl) ether		ND		38	170
3 & 4 Methylphenol		ND		59	220
N-Nitrosodi-n-propylamine		ND		29	110
Hexachloroethane		ND		23	110
Nitrobenzene		ND		17	110
Isophorone		ND		29	110
2-Nitrophenol		ND		26	110
2,4-Dimethylphenol		ND		21	110
Benzoic acid		ND		930	2800
Bis(2-chloroethoxy)methane		ND		28	110
2,4-Dichlorophenol		ND		21	110
1,2,4-Trichlorobenzene		ND		11	56
Naphthalene		ND		6.4	22
4-Chloroaniline		ND		30	110
Hexachlorobutadiene		ND		14	56
4-Chloro-3-methylphenol		ND		25	110
2-Methylnaphthalene		22	J	3.5	22
Hexachlorocyclopentadiene		ND		28	110
2,4,6-Trichlorophenol		ND		37	170
2,4,5-Trichlorophenol		ND		26	110
2-Chloronaphthalene		ND		2.1	22
2-Nitroaniline		ND		21	110
Dimethyl phthalate		ND		8.6	110
Acenaphthylene		ND		2.6	22
2,6-Dinitrotoluene		ND		21	110
3-Nitroaniline		ND		32	110
Acenaphthene		ND		6.4	22
2,4-Dinitrophenol		ND		230	1100
4-Nitrophenol		ND		290	1100
Dibenzofuran		ND		19	110
2,4-Dinitrotoluene		ND		16	110
Diethyl phthalate		ND		8.0	110
4-Chlorophenyl phenyl ether		ND		18	110
Fluorene		ND		2.9	22
4-Nitroaniline		ND		21	110

Handwritten signature: MW 5/24/07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040116

Lab Sample ID: 580-5689-10

Client Matrix: Solid

% Moisture: 12.0

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009348.D

Dilution: 10

Initial Weight/Volume: 20.3703 g

Date Analyzed: 05/01/2007 2220

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol		ND		300	1100
N-Nitrosodiphenylamine		ND		17	56
4-Bromophenyl phenyl ether		ND		11	110
Hexachlorobenzene		ND		12	56
Pentachlorophenol		ND		35	110
Phenanthrene		ND		4.5	22
Anthracene		ND		4.8	22
Di-n-butyl phthalate		ND	LM	14	220
Fluoranthene		ND		3.5	22
Pyrene		ND		3.0	22
Butyl benzyl phthalate		ND		32	110
3,3'-Dichlorobenzidine		ND		10	220
Benzo[a]anthracene		ND		7.2	28
Chrysene		ND		8.4	28
Bis(2-ethylhexyl) phthalate		ND		270	1700
Di-n-octyl phthalate		ND		37	220
Benzo[a]pyrene		ND		9.5	33
Indeno[1,2,3-cd]pyrene		ND		13	45
Dibenz(a,h)anthracene		ND		13	45
Benzo[g,h,i]perylene		ND		8.1	28
Carbazole		ND		37	170
1-Methylnaphthalene		15	J	9.7	33
Benzo[b]fluoranthene		ND		6.0	22
Benzo[k]fluoranthene		ND		7.7	28

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	55	36 - 145
Phenol-d5	60	38 - 149
Nitrobenzene-d5	77	38 - 141
2-Fluorobiphenyl	61	42 - 140
2,4,6-Tribromophenol	215	28 - 143
Terphenyl-d14	69	42 - 151

mm
5/24/07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040117

Lab Sample ID: 580-5689-11

Client Matrix: Solid

% Moisture: 13.6

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009349.D

Dilution: 10

Initial Weight/Volume: 20.8811 g

Date Analyzed: 05/01/2007 2247

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		30	110
Bis(2-chloroethyl)ether		ND		33	110
2-Chlorophenol		ND		25	110
1,3-Dichlorobenzene		ND		13	55
1,4-Dichlorobenzene		ND		8.4	55
Benzyl alcohol		ND		33	110
1,2-Dichlorobenzene		ND		19	55
2-Methylphenol		ND		31	110
Bis(2-chloroisopropyl) ether		ND		38	170
3 & 4 Methylphenol		ND		59	220
N-Nitrosodi-n-propylamine		ND		29	110
Hexachloroethane		ND		23	110
Nitrobenzene		ND		17	110
Isophorone		ND		29	110
2-Nitrophenol		ND		25	110
2,4-Dimethylphenol		ND		21	110
Benzoic acid		ND		920	2800
Bis(2-chloroethoxy)methane		ND		28	110
2,4-Dichlorophenol		ND		21	110
1,2,4-Trichlorobenzene		ND		11	55
Naphthalene		100		6.3	22
4-Chloroaniline		ND		30	110
Hexachlorobutadiene		ND		14	55
4-Chloro-3-methylphenol		ND		24	110
2-Methylnaphthalene		210		3.4	22
Hexachlorocyclopentadiene		ND		28	110
2,4,6-Trichlorophenol		ND		37	170
2,4,5-Trichlorophenol		ND		25	110
2-Chloronaphthalene		ND		2.1	22
2-Nitroaniline		ND		21	110
Dimethyl phthalate		ND		8.5	110
Acenaphthylene		ND		2.5	22
2,6-Dinitrotoluene		ND		21	110
3-Nitroaniline		ND		32	110
Acenaphthene		ND		6.3	22
2,4-Dinitrophenol		ND		230	1100
4-Nitrophenol		ND		290	1100
Dibenzofuran		38		19	110
2,4-Dinitrotoluene		ND		16	110
Diethyl phthalate		ND		8.0	110
4-Chlorophenyl phenyl ether		ND		18	110
Fluorene		ND		2.9	22
4-Nitroaniline		ND		21	110

MW 52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040117

Lab Sample ID: 580-5689-11

Client Matrix: Solid

% Moisture: 13.6

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009349.D

Dilution: 10

Initial Weight/Volume: 20.8811 g

Date Analyzed: 05/01/2007 2247

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol		ND		300	1100
N-Nitrosodiphenylamine		ND		17	55
4-Bromophenyl phenyl ether		ND		11	110
Hexachlorobenzene		ND		12	55
Pentachlorophenol		ND		34	110
Phenanthrene		89		4.4	22
Anthracene		6.5		4.8	22
Di-n-butyl phthalate		58		14	220
Fluoranthene		33		3.4	22
Pyrene		43		3.0	22
Butyl benzyl phthalate		ND		32	110
3,3'-Dichlorobenzidine		ND		10	220
Benzo[a]anthracene		29		7.2	28
Chrysene		37		8.3	28
Bis(2-ethylhexyl) phthalate		ND		270	1700
Di-n-octyl phthalate		ND		37	220
Benzo[a]pyrene		43		9.4	33
Indeno[1,2,3-cd]pyrene		55		13	44
Dibenz(a,h)anthracene		40	J	13	44
Benzo[g,h,i]perylene		57		8.1	28
Carbazole		ND		37	170
1-Methylnaphthalene		130		9.6	33
Benzo[b]fluoranthene		52		6.0	22
Benzo[k]fluoranthene		11	J	7.6	28

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	24	36 - 145
Phenol-d5	29	38 - 149
Nitrobenzene-d5	53	38 - 141
2-Fluorobiphenyl	49	42 - 140
2,4,6-Tribromophenol	200	28 - 143
Terphenyl-d14	82	42 - 151

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040119

Lab Sample ID: 580-5689-12

Client Matrix: Solid

% Moisture: 23.8

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009350.D

Dilution: 10

Initial Weight/Volume: 20.2527 g

Date Analyzed: 05/01/2007 2315

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		35	130
Bis(2-chloroethyl)ether		ND		39	130
2-Chlorophenol		ND		30	130
1,3-Dichlorobenzene		ND		16	65
1,4-Dichlorobenzene		ND		9.8	65
Benzyl alcohol		ND		39	130
1,2-Dichlorobenzene		ND		22	65
2-Methylphenol		ND		36	130
Bis(2-chloroisopropyl) ether		ND		44	190
3 & 4 Methylphenol		ND		69	260
N-Nitrosodi-n-propylamine		ND		34	130
Hexachloroethane		ND		27	130
Hexachlorocyclopentadiene		ND		32	130
2,4,6-Trichlorophenol		ND		43	190
2,4,5-Trichlorophenol		ND		30	130
2-Chloronaphthalene		ND		2.5	26
2-Nitroaniline		ND		25	130
Dimethyl phthalate		ND		10	130
Acenaphthylene		ND		3.0	26
2,6-Dinitrotoluene		ND		25	130
3-Nitroaniline		ND		38	130
Acenaphthene		ND		7.4	26
2,4-Dinitrophenol		ND		270	1300
4-Nitrophenol		ND		340	1300
Dibenzofuran		ND		22	130
2,4-Dinitrotoluene		ND		18	130
Diethyl phthalate		ND		9.3	130
4-Chlorophenyl phenyl ether		ND		21	130
Fluorene		2300 J		3.4	26
4-Nitroaniline		ND		25	130
4,6-Dinitro-2-methylphenol		ND		350	1300
N-Nitrosodiphenylamine		ND		19	65
4-Bromophenyl phenyl ether		ND		13	130
Hexachlorobenzene		ND		14	65
Pentachlorophenol		ND		40	130
Phenanthrene		3600 J		5.2	26
Anthracene		180 J		5.6	26
Di-n-butyl phthalate		ND		17	260
Fluoranthene		170 J		4.0	26
Pyrene		510 J		3.5	26
Butyl benzyl phthalate		ND		38	130
3,3'-Dichlorobenzidine		ND		12	260
Benzo[a]anthracene		120 J		8.4	32

MW 5240

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040119

Lab Sample ID: 580-5689-12

Client Matrix: Solid

% Moisture: 23.8

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID:	SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID:	ak009350.D
Dilution:	10		Initial Weight/Volume:	20.2527 g
Date Analyzed:	05/01/2007 2315		Final Weight/Volume:	2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:	

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Chrysene		290 J		9.7	32
Bis(2-ethylhexyl) phthalate		ND		310	1900 UJ
Surrogate		%Rec		Acceptance Limits	
2-Fluorophenol		833	XI	36 - 145	
Phenol-d5		99		38 - 149	
Nitrobenzene-d5		15200	XI	38 - 141	
2-Fluorobiphenyl		16	XI	42 - 140	
2,4,6-Tribromophenol		188	XI	28 - 143	
Terphenyl-d14		85		42 - 151	

Method:	8270C	Analysis Batch: 580-18161	Instrument ID:	SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID:	ak009363.D
Dilution:	10		Initial Weight/Volume:	20.2527 g
Date Analyzed:	05/02/2007 1644		Final Weight/Volume:	2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:	

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Nitrobenzene		ND		19	130 UJ
Isophorone		ND	Am	34	130
2-Nitrophenol		ND		30	130
2,4-Dimethylphenol		ND		25	130
Benzoic acid		ND		1100	3200
Bis(2-chloroethoxy)methane		ND		32	130
2,4-Dichlorophenol		ND		25	130
1,2,4-Trichlorobenzene		ND		13	65
Naphthalene		6000 J		7.4	26
4-Chloroaniline		ND		35	130 UJ
Hexachlorobutadiene		ND		17	65
4-Chloro-3-methylphenol		ND		28	130
Di-n-octyl phthalate		ND		43	260
Benzo[a]pyrene		81 J		11	39
Indeno[1,2,3-cd]pyrene		ND		16	52 UJ
Dibenz[a,h]anthracene		ND		16	52
Benzo[g,h,i]perylene		85 J		9.5	32
Carbazole		ND		43	190 UJ
Benzo[b]fluoranthene		80 J		7.0	26 UJ
Benzo[k]fluoranthene		ND		8.9	32 UJ

Now 52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040119

Lab Sample ID: 580-5689-12

Client Matrix: Solid

% Moisture: 23.8

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009362.D

Dilution: 100

Initial Weight/Volume: 20.2527 g

Date Analyzed: 05/02/2007 1616

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylnaphthalene		15000		40	260
1-Methylnaphthalene		10000		110	390

MW
524.07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040120

Lab Sample ID: 580-5689-13

Client Matrix: Solid

% Moisture: 9.9

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009364.D

Dilution: 100

Initial Weight/Volume: 20.0697 g

Date Analyzed: 05/02/2007 1711

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol	R	ND		300	1100
Bis(2-chloroethyl)ether		ND		330	1100
2-Chlorophenol	R	ND		250	1100
1,3-Dichlorobenzene		ND		130	550
1,4-Dichlorobenzene		ND		84	550
Benzyl alcohol	R	ND		330	1100
1,2-Dichlorobenzene		ND		190	550
2-Methylphenol	R	ND		310	1100
Bis(2-chloroisopropyl) ether		ND		380	1700
3 & 4 Methylphenol	R	ND		590	2200
N-Nitrosodi-n-propylamine		ND		290	1100
Hexachloroethane		ND		230	1100
Nitrobenzene		ND		170	1100
Isophorone		ND		290	1100
2-Nitrophenol	R	ND		250	1100
2,4-Dimethylphenol	R	ND		210	1100
Benzoic acid	R	ND		9200	28000
Bis(2-chloroethoxy)methane	R	ND		280	1100
2,4-Dichlorophenol	R	ND		210	1100
1,2,4-Trichlorobenzene		ND		110	550
Naphthalene		240		63	220
4-Chloroaniline		ND		300	1100
Hexachlorobutadiene		ND		140	550
4-Chloro-3-methylphenol	R	ND		240	1100
2-Methylnaphthalene		1400		34	220
Hexachlorocyclopentadiene		ND		280	1100
2,4,6-Trichlorophenol	R	ND		370	1700
2,4,5-Trichlorophenol	R	ND		250	1100
2-Chloronaphthalene		170	J	21	220
2-Nitroaniline		ND		210	1100
Dimethyl phthalate		ND		85	1100
Acenaphthylene		ND		25	220
2,6-Dinitrotoluene		ND		210	1100
3-Nitroaniline		ND		320	1100
Acenaphthene		900		63	220
2,4-Dinitrophenol	R	ND		2300	11000
4-Nitrophenol	R	ND		2900	11000
Dibenzofuran		200	J	190	1100
2,4-Dinitrotoluene		ND		150	1100
Diethyl phthalate		ND		80	1100
4-Chlorophenyl phenyl ether		ND		180	1100
Fluorene		1000		29	220
4-Nitroaniline		ND		210	1100

MW 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040120

Lab Sample ID: 580-5689-13

Date Sampled: 04/18/2007 0000

Client Matrix: Solid

% Moisture: 9.9

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009364.D

Dilution: 100

Initial Weight/Volume: 20.0697 g

Date Analyzed: 05/02/2007 1711

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	R	ND		3000	11000
N-Nitrosodiphenylamine		ND		170	550
4-Bromophenyl phenyl ether		ND		110	1100
Hexachlorobenzene		ND		120	550
Pentachlorophenol	R	ND		340	1400
Phenanthrene		3300		44	220
Anthracene		480		48	220
Di-n-butyl phthalate		1000 1400		140	2200
Fluoranthene		1400		34	220
Pyrene		3200		30	220
Butyl benzyl phthalate		ND		320	1100
3,3'-Dichlorobenzidine		ND		100	2200
Benzo[a]anthracene		860		72	280
Chrysene		1400		83	280
Bis(2-ethylhexyl) phthalate		ND		2700	17000
Di-n-octyl phthalate		ND		370	2200
Benzo[a]pyrene		650		94	330
Indeno[1,2,3-cd]pyrene		ND		130	440
Dibenz(a,h)anthracene		ND		130	440
Benzo[g,h,i]perylene		480		81	280
Carbazole		950	J	370	1700
1-Methylnaphthalene		1000		96	330
Benzo[b]fluoranthene		490		60	220
Benzo[k]fluoranthene		ND		76	280

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	0	36 - 145
Phenol-d5	0	38 - 149
Nitrobenzene-d5	164	38 - 141
2-Fluorobiphenyl	81	42 - 140
2,4,6-Tribromophenol	0	28 - 143
Terphenyl-d14	49	42 - 151

MW
52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040122

Lab Sample ID: 580-5689-14

Client Matrix: Solid

% Moisture: 22.3

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009366.D
Dilution:	10		Initial Weight/Volume: 20.4336 g
Date Analyzed:	05/02/2007 1806		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		34	130
Bis(2-chloroethyl)ether		ND		38	130
2-Chlorophenol		ND		29	130
1,3-Dichlorobenzene		ND		15	63
1,4-Dichlorobenzene		ND		9.6	63
Benzyl alcohol		ND		38	130
1,2-Dichlorobenzene		ND		21	63
2-Methylphenol		ND		35	130
Bis(2-chloroisopropyl) ether		ND		43	190
3 & 4 Methylphenol		ND		67	250
N-Nitrosodi-n-propylamine		ND		33	130
Hexachloroethane		ND		26	130
Nitrobenzene		ND		19	130
Isophorone		ND		33	130
2-Nitrophenol		ND		29	130
2,4-Dimethylphenol		ND		24	130
Benzoic acid		ND		1000	3100
Bis(2-chloroethoxy)methane		ND		31	130
2,4-Dichlorophenol		ND		24	130
1,2,4-Trichlorobenzene		ND		12	63
Naphthalene		3100		7.2	25
4-Chloroaniline		ND		34	130
Hexachlorobutadiene		ND		16	63
4-Chloro-3-methylphenol		ND		28	130
Hexachlorocyclopentadiene		ND		31	130
2,4,6-Trichlorophenol		ND		42	190
2,4,5-Trichlorophenol		ND		29	130
2-Chloronaphthalene		ND		2.4	25
2-Nitroaniline		ND		24	130
Dimethyl phthalate		ND		9.7	130
Acenaphthylene		ND		2.9	25
2,6-Dinitrotoluene		ND		24	130
3-Nitroaniline		ND		37	130
Acenaphthene		ND		7.2	25
2,4-Dinitrophenol		ND		260	1300
4-Nitrophenol		ND		330	1300
Dibenzofuran		ND		21	130
2,4-Dinitrotoluene		ND		18	130
Diethyl phthalate		ND		9.1	130
4-Chlorophenyl phenyl ether		ND		20	130
Fluorene		2900		3.3	25
4-Nitroaniline		ND		24	130
4,6-Dinitro-2-methylphenol		ND		340	1300

MW 524-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040122

Lab Sample ID: 580-5689-14

Client Matrix: Solid

% Moisture: 22.3

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009366.D
Dilution:	10		Initial Weight/Volume: 20.4336 g
Date Analyzed:	05/02/2007 1806		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
N-Nitrosodiphenylamine		ND		19	63 U
4-Bromophenyl phenyl ether		ND		13	130
Hexachlorobenzene		ND		14	63
Pentachlorophenol		ND		39	130 U
Phenanthrene		4400		5.0	25
Anthracene		530		5.4	25
Di-n-butyl phthalate		ND		16	250 U
Fluoranthene		310		3.9	25
Pyrene		690		3.4	25
Butyl benzyl phthalate		ND		37	130 U
3,3'-Dichlorobenzidine		ND		11	250 U
Benzo[a]anthracene		190		8.2	31
Chrysene		370		9.4	31
Bis(2-ethylhexyl) phthalate		ND		300	1900 U
Di-n-octyl phthalate		ND		42	250 U
Benzo[a]pyrene		110		11	38
Indeno[1,2,3-cd]pyrene		ND		15	50 U
Dibenz(a,h)anthracene		ND		15	50 U
Benzo[g,h,i]perylene		61		9.2	31
Carbazole		ND		42	190 U
Benzo[b]fluoranthene		85		6.8	25
Benzo[k]fluoranthene		ND		8.7	31 U
Surrogate		%Rec		Acceptance Limits	
2-Fluorophenol		41		36 - 145	
Phenol-d5		57		38 - 149	
Nitrobenzene-d5		1350	XI	38 - 141	
2-Fluorobiphenyl		83		42 - 140	
2,4,6-Tribromophenol		228	XI	28 - 143	
Terphenyl-d14		115		42 - 151	

mm
5/24/07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040122

Lab Sample ID: 580-5689-14

Client Matrix: Solid

% Moisture: 22.3

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009365.D

Dilution: 100

Initial Weight/Volume: 20.4336 g

Date Analyzed: 05/02/2007 1738

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylnaphthalene		18000		39	250
1-Methylnaphthalene		12000		110	380

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040124

Lab Sample ID: 580-5689-15

Client Matrix: Solid

% Moisture: 11.2

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009367.D

Dilution: 10

Initial Weight/Volume: 20.2441 g

Date Analyzed: 05/02/2007 1833

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		30	110
Bis(2-chloroethyl)ether		ND		33	110
2-Chlorophenol		ND		26	110
1,3-Dichlorobenzene		ND		13	56
1,4-Dichlorobenzene		ND		8.5	56
Benzyl alcohol		ND		33	110
1,2-Dichlorobenzene		ND		19	56
2-Methylphenol		ND		31	110
Bis(2-chloroisopropyl) ether		ND		38	170
3 & 4 Methylphenol		ND		59	220
N-Nitrosodi-n-propylamine		ND		29	110
Hexachloroethane		ND		23	110
Nitrobenzene		ND		17	110
Isophorone		ND		29	110
2-Nitrophenol		ND		26	110
2,4-Dimethylphenol		ND		21	110
Benzoic acid		ND		920	2800
Bis(2-chloroethoxy)methane		ND		28	110
2,4-Dichlorophenol		ND		21	110
1,2,4-Trichlorobenzene		ND		11	56
Naphthalene		410		6.3	22
4-Chloroaniline		ND		30	110
Hexachlorobutadiene		ND		14	56
4-Chloro-3-methylphenol		ND		24	110
2-Methylnaphthalene		2900		3.4	22
Hexachlorocyclopentadiene		ND		28	110
2,4,6-Trichlorophenol		ND		37	170
2,4,5-Trichlorophenol		ND		26	110
2-Chloronaphthalene		ND		2.1	22
2-Nitroaniline		ND		21	110
Dimethyl phthalate		ND		8.6	110
Acenaphthylene		ND		2.6	22
2,6-Dinitrotoluene		ND		21	110
3-Nitroaniline		ND		32	110
Acenaphthene		350		6.3	22
2,4-Dinitrophenol		ND		230	1100
4-Nitrophenol		ND		290	1100
Dibenzofuran		ND		19	110
2,4-Dinitrotoluene		ND		16	110
Diethyl phthalate		ND		8.0	110
4-Chlorophenyl phenyl ether		ND		18	110
Fluorene		600		2.9	22
4-Nitroaniline		ND		21	110

MM 52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040124

Lab Sample ID: 580-5689-15

Client Matrix: Solid

% Moisture: 11.2

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009367.D
Dilution:	10		Initial Weight/Volume: 20.2441 g
Date Analyzed:	05/02/2007 1833		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol		ND		300	1100
N-Nitrosodiphenylamine		ND		17	56
4-Bromophenyl phenyl ether		ND		11	110
Hexachlorobenzene		ND		12	56
Pentachlorophenol		ND		34	110
Phenanthrene		960		4.4	22
Anthracene		120		4.8	22
Di-n-butyl phthalate		120 <i>70</i>	<i>70</i>	14	220
Fluoranthene		70		3.4	22
Pyrene		140		3.0	22
Butyl benzyl phthalate		ND		32	110
3,3'-Dichlorobenzidine		ND		10	220
Benzo[a]anthracene		38		7.2	28
Chrysene		53		8.3	28
Bis(2-ethylhexyl) phthalate		ND		270	17000
Di-n-octyl phthalate		ND		37	220
Benzo[a]pyrene		37		9.5	33
Indeno[1,2,3-cd]pyrene		ND		13	44
Dibenz(a,h)anthracene		ND		13	44
Benzo[g,h,i]perylene		29		8.1	28
Carbazole		ND		37	170
1-Methylnaphthalene		2200		9.7	33
Benzo[b]fluoranthene		30		6.0	22
Benzo[k]fluoranthene		ND		7.7	28

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	39	36 - 145
Phenol-d5	39	38 - 149
Nitrobenzene-d5	111	38 - 141
2-Fluorobiphenyl	43	42 - 140
2,4,6-Tribromophenol	192	28 - 143
Terphenyl-d14	51	42 - 151

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Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040125

Lab Sample ID: 580-5689-16

Client Matrix: Solid

% Moisture: 8.5

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18161	Instrument ID:	SEA040
Preparation:	3550B	Prep Batch:	580-17981	Lab File ID:	ak009354.D
Dilution:	1.0			Initial Weight/Volume:	20.1410 g
Date Analyzed:	05/02/2007 0105			Final Weight/Volume:	2 mL
Date Prepared:	04/24/2007 0833			Injection Volume:	

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		2.9	11
Bis(2-chloroethyl)ether		ND		3.3	11
2-Chlorophenol		ND		2.5	11
1,3-Dichlorobenzene		ND		1.3	5.4
1,4-Dichlorobenzene		ND		0.82	5.4
Benzyl alcohol		ND		3.3	11
1,2-Dichlorobenzene		ND		1.8	5.4
2-Methylphenol		ND		3.0	11
Bis(2-chloroisopropyl) ether		ND		3.7	16
3 & 4 Methylphenol		ND		5.8	22
N-Nitrosodi-n-propylamine		ND		2.8	11
Hexachloroethane		ND		2.3	11
Nitrobenzene		ND		1.6	11
Isophorone		ND		2.8	11
2-Nitrophenol		ND		2.5	11
2,4-Dimethylphenol		ND		2.1	11
Benzoic acid		ND		90	270
Bis(2-chloroethoxy)methane		ND		2.7	11
2,4-Dichlorophenol		ND		2.1	11
1,2,4-Trichlorobenzene		ND		1.1	5.4
Naphthalene		15		0.62	2.2
4-Chloroaniline		ND		2.9	11
Hexachlorobutadiene		ND		1.4	5.4
4-Chloro-3-methylphenol		ND		2.4	11
2-Methylnaphthalene		110		0.34	2.2
Hexachlorocyclopentadiene		ND		2.7	11
2,4,6-Trichlorophenol		ND		3.6	16
2,4,5-Trichlorophenol		ND		2.5	11
2-Chloronaphthalene		ND		0.21	2.2
2-Nitroaniline		ND		2.1	11
Dimethyl phthalate		ND		0.84	11
Acenaphthylene		ND		0.25	2.2
2,6-Dinitrotoluene		ND		2.1	11
3-Nitroaniline		ND		3.1	11
Acenaphthene		10		0.62	2.2
2,4-Dinitrophenol		ND		22	110
4-Nitrophenol		ND		28	110
Dibenzofuran		ND		1.8	11
2,4-Dinitrotoluene		ND		1.5	11
Diethyl phthalate		ND		0.78	11
4-Chlorophenyl phenyl ether		ND		1.7	11
Fluorene		21		0.28	2.2
4-Nitroaniline		5.4	J	2.1	11

MMS 2407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040125

Lab Sample ID: 580-5689-16

Client Matrix: Solid

% Moisture: 8.5

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009354.D

Dilution: 1.0

Initial Weight/Volume: 20.1410 g

Date Analyzed: 05/02/2007 0105

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol		ND		29	110
N-Nitrosodiphenylamine		ND		1.6	5.4
4-Bromophenyl phenyl ether		ND		1.1	11
Hexachlorobenzene		ND		1.2	5.4
Pentachlorophenol		ND		3.4	11
Phenanthrene		37		0.43	2.2
Anthracene		3.7		0.47	2.2
Di-n-butyl phthalate		7.8 <i>7.8</i>	J <i>J</i>	1.4	22
Fluoranthene		2.4		0.34	2.2
Pyrene		4.7		0.29	2.2
Butyl benzyl phthalate		ND		3.1	11
3,3'-Dichlorobenzidine		ND		0.99	22
Benzo[a]anthracene		1.3	J	0.71	2.7
Chrysene		1.7	J	0.81	2.7
Bis(2-ethylhexyl) phthalate		ND		26	160
Di-n-octyl phthalate		ND		3.6	22
Benzo[a]pyrene		ND		0.92	3.3
Indeno[1,2,3-cd]pyrene		ND		1.3	4.3
Dibenz(a,h)anthracene		ND		1.3	4.3
Benzo[g,h,i]perylene		ND		0.79	2.7
Carbazole		ND		3.6	16
1-Methylnaphthalene		79		0.94	3.3
Benzo[b]fluoranthene		ND		0.59	2.2
Benzo[k]fluoranthene		ND		0.75	2.7

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	51	36 - 145
Phenol-d5	59	38 - 149
Nitrobenzene-d5	52	38 - 141
2-Fluorobiphenyl	59	42 - 140
2,4,6-Tribromophenol	55	28 - 143
Terphenyl-d14	84	42 - 151

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040127

Lab Sample ID: 580-5689-17

Date Sampled: 04/19/2007 0000

Client Matrix: Solid

% Moisture: 21.1

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID:	SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID:	ak009369.D
Dilution:	10		Initial Weight/Volume:	20.8760 g
Date Analyzed:	05/02/2007 1927		Final Weight/Volume:	2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:	

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		33	120
Bis(2-chloroethyl)ether		ND		36	120
2-Chlorophenol		ND		28	120
1,3-Dichlorobenzene		ND		15	61
1,4-Dichlorobenzene		ND		9.2	61
Benzyl alcohol		ND		36	120
1,2-Dichlorobenzene		ND		21	61
2-Methylphenol		ND		34	120
Bis(2-chloroisopropyl) ether		ND		41	180
3 & 4 Methylphenol		ND		64	240
N-Nitrosodi-n-propylamine		ND		32	120
Hexachloroethane		ND		25	120
Nitrobenzene		ND		18	120
Isophorone		ND		32	120
2-Nitrophenol		ND		28	120
2,4-Dimethylphenol		ND		23	120
Benzoic acid		ND		1000	3000
Bis(2-chloroethoxy)methane		ND		30	120
2,4-Dichlorophenol		ND		23	120
1,2,4-Trichlorobenzene		ND		12	61
Naphthalene		2600		6.9	24
4-Chloroaniline		ND		33	120
Hexachlorobutadiene		ND		16	61
4-Chloro-3-methylphenol		ND		27	120
Hexachlorocyclopentadiene		ND		30	120
2,4,6-Trichlorophenol		ND		40	180
2,4,5-Trichlorophenol		ND		28	120
2-Chloronaphthalene		ND		2.3	24
2-Nitroaniline		ND		23	120
Dimethyl phthalate		ND		9.3	120
Acenaphthylene		ND		2.8	24
2,6-Dinitrotoluene		ND		23	120
3-Nitroaniline		ND		35	120
Acenaphthene		ND		6.9	24
2,4-Dinitrophenol		ND		250	1200
4-Nitrophenol		ND		320	1200
Dibenzofuran		ND		21	120
2,4-Dinitrotoluene		ND		17	120
Diethyl phthalate		ND		8.7	120
4-Chlorophenyl phenyl ether		ND		19	120
Fluorene		1400		3.2	24
4-Nitroaniline		ND		23	120
4,6-Dinitro-2-methylphenol		ND		330	1200

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Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040127

Lab Sample ID: 580-5689-17

Client Matrix: Solid

% Moisture: 21.1

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009369.D

Dilution: 10

Initial Weight/Volume: 20.8760 g

Date Analyzed: 05/02/2007 1927

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
N-Nitrosodiphenylamine		ND		18	61
4-Bromophenyl phenyl ether		ND		12	120
Hexachlorobenzene		ND		13	61
Pentachlorophenol		ND		38	120
Phenanthrene		4600 J		4.9	24
Anthracene		510 J		5.2	24
Di-n-butyl phthalate		ND	mu	16	240
Fluoranthene		520 J		3.8	24
Pyrene		770 J		3.3	24
Butyl benzyl phthalate		ND		35	120
3,3'-Dichlorobenzidine		ND		11	240
Benzo[a]anthracene		130 J		7.9	30
Chrysene		180 J		9.1	30
Bis(2-ethylhexyl) phthalate		ND		290	1800
Di-n-octyl phthalate		ND		40	240
Benzo[a]pyrene		62 J		10	36
Indeno[1,2,3-cd]pyrene		43 J	mu	15	49
Dibenz(a,h)anthracene		ND		15	49
Benzo[g,h,i]perylene		43 J		8.9	30
Carbazole		ND		40	180
Benzo[b]fluoranthene		59 J		6.6	24
Benzo[k]fluoranthene		10 J	mu	8.4	30
Surrogate		%Rec		Acceptance Limits	
2-Fluorophenol		30	XI	36 - 145	
Phenol-d5		51		38 - 149	
Nitrobenzene-d5		521	XI	38 - 141	
2-Fluorobiphenyl		34	XI	42 - 140	
2,4,6-Tribromophenol		215	XI	28 - 143	
Terphenyl-d14		108		42 - 151	

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040127

Lab Sample ID: 580-5689-17

Client Matrix: Solid

% Moisture: 21.1

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009368.D

Dilution: 100

Initial Weight/Volume: 20.8760 g

Date Analyzed: 05/02/2007 1900

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylnaphthalene		9800		38	240
1-Methylnaphthalene		8300		110	360

mm
5/24/07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040129

Lab Sample ID: 580-5689-18

Client Matrix: Solid

% Moisture: 12.3

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18161

Instrument ID: SEA040

Preparation: 3550B

Prep Batch: 580-17981

Lab File ID: ak009356.D

Dilution: 10

Initial Weight/Volume: 20.9925 g

Date Analyzed: 05/02/2007 0200

Final Weight/Volume: 2 mL

Date Prepared: 04/24/2007 0833

Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol	R	ND		29	110 U
Bis(2-chloroethyl)ether		ND		33	110 U
2-Chlorophenol	R	ND		25	110 U
1,3-Dichlorobenzene		ND		13	54 U
1,4-Dichlorobenzene		ND		8.3	54 U
Benzyl alcohol	R	ND		33	110 U
1,2-Dichlorobenzene		ND		18	54 U
2-Methylphenol	R	ND		30	110 U
Bis(2-chloroisopropyl) ether		ND		37	160 U
3 & 4 Methylphenol	R	ND		58	220 U
N-Nitrosodi-n-propylamine		ND		28	110 U
Hexachloroethane		ND		23	110 U
Nitrobenzene		ND		16	110 U
Isophorone		ND		28	110 U
2-Nitrophenol	R	ND		25	110 U
2,4-Dimethylphenol		ND		21	110 U
Benzoic acid	R	ND		900	2700 U
Bis(2-chloroethoxy)methane		ND		27	110 U
2,4-Dichlorophenol	R	ND		21	110 U
1,2,4-Trichlorobenzene		ND		11	54 U
Naphthalene		1000		6.2	22 U
4-Chloroaniline		ND		29	110 U
Hexachlorobutadiene		ND		14	54 U
4-Chloro-3-methylphenol	R	ND		24	110 U
2-Methylnaphthalene		2900		3.4	22 U
Hexachlorocyclopentadiene		ND		27	110 U
2,4,6-Trichlorophenol	R	ND		36	100 U
2,4,5-Trichlorophenol		ND		25	110 U
2-Chloronaphthalene		ND		2.1	22 U
2-Nitroaniline		ND		21	110 U
Dimethyl phthalate		ND		8.4	110 U
Acenaphthylene		ND		2.5	22 U
2,6-Dinitrotoluene		ND		21	110 U
3-Nitroaniline		ND		31	110 U
Acenaphthene		620		6.2	22 U
2,4-Dinitrophenol	R	ND		220	1100 U
4-Nitrophenol	R	ND		280	1400 U
Dibenzofuran		ND		18	110 U
2,4-Dinitrotoluene		ND		15	110 U
Diethyl phthalate		ND		7.8	110 U
4-Chlorophenyl phenyl ether		ND		17	110 U
Fluorene		1700		2.8	22 U
4-Nitroaniline		ND		21	110 U

MR 524-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040129

Lab Sample ID: 580-5689-18

Date Sampled: 04/19/2007 0000

Client Matrix: Solid

% Moisture: 12.3

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18161	Instrument ID: SEA040
Preparation:	3550B	Prep Batch: 580-17981	Lab File ID: ak009356.D
Dilution:	10		Initial Weight/Volume: 20.9925 g
Date Analyzed:	05/02/2007 0200		Final Weight/Volume: 2 mL
Date Prepared:	04/24/2007 0833		Injection Volume:

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	R	ND		290	1100
N-Nitrosodiphenylamine		ND		16	54
4-Bromophenyl phenyl ether		ND		11	110
Hexachlorobenzene		ND		12	54
Pentachlorophenol	R	ND		34	110
Phenanthrene		2500		4.3	22
Anthracene		220		4.7	22
Di-n-butyl phthalate		ND		14	220
Fluoranthene		340		3.4	22
Pyrene		430		2.9	22
Butyl benzyl phthalate		ND		31	110
3,3'-Dichlorobenzidine		ND		9.9	220
Benzo[a]anthracene		84		7.1	27
Chrysene		120		8.1	27
Bis(2-ethylhexyl) phthalate		ND		260	1600
Di-n-octyl phthalate		ND		36	220
Benzo[a]pyrene		44		9.2	33
Indeno[1,2,3-cd]pyrene		ND		13	43
Dibenz(a,h)anthracene		ND		13	43
Benzo[g,h,i]perylene		37		7.9	27
Carbazole		ND		36	160
1-Methylnaphthalene		2800		9.4	33
Benzo[b]fluoranthene		48		5.9	22
Benzo[k]fluoranthene		9.8	J	7.5	27
Surrogate		%Rec		Acceptance Limits	
2-Fluorophenol		9	X I	36 - 145	
Phenol-d5		67		38 - 149	
Nitrobenzene-d5		549	X I	38 - 141	
2-Fluorobiphenyl		74		42 - 140	
2,4,6-Tribromophenol		192	X I	28 - 143	
Terphenyl-d14		109		42 - 151	

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040132

Lab Sample ID: 580-5689-20

Client Matrix: Water

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009208.D
Dilution:	1.0		Initial Weight/Volume: 1045 mL
Date Analyzed:	04/25/2007 2038		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0071	0.29
Bis(2-chloroethyl)ether	ND		0.017	0.19
2-Chlorophenol	ND		0.021	0.19
1,3-Dichlorobenzene	ND		0.011	0.19
1,4-Dichlorobenzene	ND		0.011	0.19
Benzyl alcohol	ND		0.012	0.19
1,2-Dichlorobenzene	ND		0.011	0.19
2-Methylphenol	ND		0.036	0.19
Bis(2-chloroisopropyl) ether	ND		0.0084	0.19
3 & 4 Methylphenol	ND		0.016	0.38
N-Nitrosodi-n-propylamine	ND		0.019	0.19
Hexachloroethane	ND		0.012	0.29
Nitrobenzene	ND		0.0072	0.19
Isophorone	ND		0.011	0.19
2-Nitrophenol	ND		0.020	0.19
2,4-Dimethylphenol	ND		0.017	0.96
Benzoic acid	ND		0.020	0.96
Bis(2-chloroethoxy)methane	ND		0.0091	0.19
2,4-Dichlorophenol	ND		0.012	0.19
1,2,4-Trichlorobenzene	ND		0.0096	0.19
Naphthalene	ND		0.0013	0.19
4-Chloroaniline	ND		0.018	0.19
Hexachlorobutadiene	ND		0.015	0.29
4-Chloro-3-methylphenol	ND		0.013	0.19
2-Methylnaphthalene	ND		0.0053	0.096
Hexachlorocyclopentadiene	ND		0.011	0.96
2,4,6-Trichlorophenol	ND		0.0096	0.29
2,4,5-Trichlorophenol	ND		0.0081	0.19
2-Chloronaphthalene	ND		0.0029	0.029
2-Nitroaniline	ND		0.011	0.19
Dimethyl phthalate	ND		0.011	0.19
Acenaphthylene	ND		0.0025	0.038
2,6-Dinitrotoluene	ND		0.013	0.19
3-Nitroaniline	ND		0.054	0.19
Acenaphthene	ND		0.0011	0.048
2,4-Dinitrophenol	ND		0.056	2.4
4-Nitrophenol	ND		0.15	0.96
Dibenzofuran	ND		0.0094	0.19
2,4-Dinitrotoluene	ND		0.011	0.19
Diethyl phthalate	ND		0.0089	0.19
4-Chlorophenyl phenyl ether	ND		0.011	0.19
Fluorene	ND		0.0040	0.029
4-Nitroaniline	ND		0.017	0.29

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Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040132

Lab Sample ID: 580-5689-20

Client Matrix: Water

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009208.D
Dilution:	1.0		Initial Weight/Volume: 1045 mL
Date Analyzed:	04/25/2007 2038		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.051	1.9
N-Nitrosodiphenylamine	ND		0.012	0.19
4-Bromophenyl phenyl ether	ND		0.0096	0.19
Hexachlorobenzene	ND		0.0078	0.19
Pentachlorophenol	ND		0.012	0.33
Phenanthrene	ND		0.0023	0.038
Anthracene	ND		0.0018	0.019
Di-n-butyl phthalate	0.075 <i>nm</i>	J B	0.0084	0.19
Fluoranthene	ND		0.0026	0.024
Pyrene	ND		0.0019	0.029
Butyl benzyl phthalate	0.090 <i>nm</i>	J B	0.023	0.29
3,3'-Dichlorobenzidine	ND		0.15	0.96
Benzo[a]anthracene	ND		0.0032	0.029
Chrysene	ND		0.0043	0.019
Bis(2-ethylhexyl) phthalate	0.19 <i>nm</i>	J B	0.031	1.4
Di-n-octyl phthalate	ND	<i>nm</i>	0.017	0.19
Benzo[a]pyrene	ND		0.0026	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0049	0.029
Dibenz(a,h)anthracene	ND		0.0044	0.029
Benzo[g,h,i]perylene	ND		0.0057	0.029
Carbazole	ND		0.0086	0.19
1-Methylnaphthalene	ND		0.0050	0.029
Benzo[b]fluoranthene	ND		0.0044	0.038
Benzo[k]fluoranthene	ND		0.0053	0.029

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	29	10 - 120
Phenol-d5	18	10 - 102
Nitrobenzene-d5	78	34 - 146
2-Fluorobiphenyl	70	35 - 143
2,4,6-Tribromophenol	67	29 - 151
Terphenyl-d14	82	35 - 166

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040133

Lab Sample ID: 580-5689-21

Client Matrix: Water

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009209.D

Dilution: 1.0

Initial Weight/Volume: 1040 mL

Date Analyzed: 04/25/2007 2106

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0071	0.29
Bis(2-chloroethyl)ether	ND		0.017	0.19
2-Chlorophenol	ND		0.021	0.19
1,3-Dichlorobenzene	ND		0.011	0.19
1,4-Dichlorobenzene	ND		0.012	0.19
Benzyl alcohol	ND		0.013	0.19
1,2-Dichlorobenzene	ND		0.011	0.19
2-Methylphenol	ND		0.037	0.19
Bis(2-chloroisopropyl) ether	ND		0.0085	0.19
3 & 4 Methylphenol	ND		0.016	0.38
N-Nitrosodi-n-propylamine	ND		0.019	0.19
Hexachloroethane	ND		0.013	0.29
Nitrobenzene	ND		0.0072	0.19
Isophorone	ND		0.011	0.19
2-Nitrophenol	ND		0.020	0.19
2,4-Dimethylphenol	ND		0.017	0.96
Benzoic acid	ND		0.020	0.96
Bis(2-chloroethoxy)methane	ND		0.0091	0.19
2,4-Dichlorophenol	ND		0.013	0.19
1,2,4-Trichlorobenzene	ND		0.0096	0.19
Naphthalene	ND		0.0013	0.19
4-Chloroaniline	ND		0.018	0.19
Hexachlorobutadiene	ND		0.015	0.29
4-Chloro-3-methylphenol	ND		0.013	0.19
2-Methylnaphthalene	0.014	J	0.0053	0.096
Hexachlorocyclopentadiene	ND		0.012	0.96
2,4,6-Trichlorophenol	ND		0.0096	0.29
2,4,5-Trichlorophenol	ND		0.0082	0.19
2-Chloronaphthalene	ND		0.0029	0.029
2-Nitroaniline	ND		0.011	0.19
Dimethyl phthalate	ND		0.012	0.19
Acenaphthylene	ND		0.0025	0.038
2,6-Dinitrotoluene	ND		0.013	0.19
3-Nitroaniline	ND		0.054	0.19
Acenaphthene	0.025	J	0.0012	0.048
2,4-Dinitrophenol	ND		0.056	2.4
4-Nitrophenol	ND		0.15	0.96
Dibenzofuran	ND		0.0094	0.19
2,4-Dinitrotoluene	ND		0.012	0.19
Diethyl phthalate	0.011	J	0.0089	0.19
4-Chlorophenyl phenyl ether	ND		0.012	0.19
Fluorene	0.047		0.0040	0.029
4-Nitroaniline	ND		0.017	0.29

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040133

Lab Sample ID: 580-5689-21

Client Matrix: Water

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID:	ak009209.D
Dilution:	1.0		Initial Weight/Volume:	1040 mL
Date Analyzed:	04/25/2007 2106		Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.051	1.9
N-Nitrosodiphenylamine	ND		0.013	0.19
4-Bromophenyl phenyl ether	ND		0.0096	0.19
Hexachlorobenzene	ND		0.0079	0.19
Pentachlorophenol	ND		0.013	0.34
Phenanthrene	0.12		0.0023	0.038
Anthracene	0.0088	J	0.0018	0.019
Di-n-butyl phthalate	0.085 <i>mw</i>	J <i>mw</i>	0.0085	0.19
Fluoranthene	0.0095	J	0.0026	0.024
Pyrene	0.025	J	0.0019	0.029
Butyl benzyl phthalate	0.096 <i>mw</i>	J <i>mw</i>	0.023	0.29
3,3'-Dichlorobenzidine	ND		0.15	0.96
Benzo[a]anthracene	ND		0.0032	0.029
Chrysene	ND		0.0043	0.019
Bis(2-ethylhexyl) phthalate	0.17 <i>mw</i>	J <i>mw</i>	0.031	1.4
Di-n-octyl phthalate	ND	<i>mw</i>	0.017	0.19
Benzo[a]pyrene	ND		0.0026	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0049	0.029
Dibenz(a,h)anthracene	ND		0.0044	0.029
Benzo[g,h,i]perylene	ND		0.0058	0.029
Carbazole	ND		0.0087	0.19
1-Methylnaphthalene	0.041		0.0050	0.029
Benzo[b]fluoranthene	ND		0.0044	0.038
Benzo[k]fluoranthene	ND		0.0053	0.029

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	28	10 - 120
Phenol-d5	17	10 - 102
Nitrobenzene-d5	72	34 - 146
2-Fluorobiphenyl	64	35 - 143
2,4,6-Tribromophenol	66	29 - 151
Terphenyl-d14	80	35 - 166

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040134

Lab Sample ID: 580-5689-22

Client Matrix: Water

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch:	580-18063	Lab File ID:	ak009210.D
Dilution:	1.0			Initial Weight/Volume:	1050 mL
Date Analyzed:	04/25/2007 2133			Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0070	0.29
Bis(2-chloroethyl)ether	ND		0.017	0.19
2-Chlorophenol	ND		0.021	0.19
1,3-Dichlorobenzene	ND		0.010	0.19
1,4-Dichlorobenzene	ND		0.011	0.19
Benzyl alcohol	0.013	J	0.012	0.19
1,2-Dichlorobenzene	ND		0.010	0.19
2-Methylphenol	ND		0.036	0.19
Bis(2-chloroisopropyl) ether	ND		0.0084	0.19
3 & 4 Methylphenol	ND		0.016	0.38
N-Nitrosodi-n-propylamine	ND		0.019	0.19
Hexachloroethane	ND		0.012	0.29
Nitrobenzene	ND		0.0071	0.19
Isophorone	ND		0.010	0.19
2-Nitrophenol	ND		0.020	0.19
2,4-Dimethylphenol	ND		0.017	0.95
Benzoic acid	ND		0.020	0.95
Bis(2-chloroethoxy)methane	ND		0.0090	0.19
2,4-Dichlorophenol	ND		0.012	0.19
1,2,4-Trichlorobenzene	ND		0.0095	0.19
Naphthalene	0.032	J	0.0013	0.19
4-Chloroaniline	ND		0.018	0.19
Hexachlorobutadiene	ND		0.015	0.29
4-Chloro-3-methylphenol	ND		0.013	0.19
2-Methylnaphthalene	0.11		0.0052	0.095
Hexachlorocyclopentadiene	ND		0.011	0.95
2,4,6-Trichlorophenol	ND		0.0095	0.29
2,4,5-Trichlorophenol	ND		0.0081	0.19
2-Chloronaphthalene	ND		0.0029	0.029
2-Nitroaniline	ND		0.010	0.19
Dimethyl phthalate	ND		0.011	0.19
Acenaphthylene	ND		0.0025	0.038
2,6-Dinitrotoluene	ND		0.013	0.19
3-Nitroaniline	ND		0.053	0.19
Acenaphthene	0.084		0.0011	0.048
2,4-Dinitrophenol	ND		0.055	2.4
4-Nitrophenol	ND		0.15	0.95
Dibenzofuran	ND		0.0093	0.19
2,4-Dinitrotoluene	ND		0.011	0.19
Diethyl phthalate	ND		0.0089	0.19
4-Chlorophenyl phenyl ether	ND		0.011	0.19
Fluorene	0.20		0.0040	0.029
4-Nitroaniline	ND		0.017	0.29

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040134

Lab Sample ID: 580-5689-22

Date Sampled: 04/20/2007 0000

Client Matrix: Water

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID:	ak009210.D
Dilution:	1.0		Initial Weight/Volume:	1050 mL
Date Analyzed:	04/25/2007 2133		Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.050	1.9
N-Nitrosodiphenylamine	ND		0.012	0.19
4-Bromophenyl phenyl ether	ND		0.0095	0.19
Hexachlorobenzene	ND		0.0078	0.19
Pentachlorophenol	ND		0.012	0.33
Phenanthrene	0.21		0.0023	0.038
Anthracene	0.015	J	0.0018	0.019
Di-n-butyl phthalate	0.078	J E	0.0084	0.19
Fluoranthene	0.013	J	0.0026	0.024
Pyrene	0.046		0.0019	0.029
Butyl benzyl phthalate	0.095	J E	0.023	0.29
3,3'-Dichlorobenzidine	ND		0.15	0.95
Benzo[a]anthracene	0.011	J	0.0031	0.029
Chrysene	0.016	J	0.0043	0.019
Bis(2-ethylhexyl) phthalate	0.42	J E	0.030	1.4
Di-n-octyl phthalate	0.073	J	0.017	0.19
Benzo[a]pyrene	0.027		0.0026	0.019
Indeno[1,2,3-cd]pyrene	ND		0.0049	0.029
Dibenz(a,h)anthracene	ND		0.0044	0.029
Benzo[g,h,i]perylene	ND		0.0057	0.029
Carbazole	ND		0.0086	0.19
1-Methylnaphthalene	0.34		0.0050	0.029
Benzo[b]fluoranthene	0.023	J	0.0044	0.038
Benzo[k]fluoranthene	ND		0.0052	0.029

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	29	10 - 120
Phenol-d5	18	10 - 102
Nitrobenzene-d5	76	34 - 146
2-Fluorobiphenyl	65	35 - 143
2,4,6-Tribromophenol	68	29 - 151
Terphenyl-d14	76	35 - 166

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040135

Lab Sample ID: 580-5689-23

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009211.D
Dilution:	1.0		Initial Weight/Volume: 995 mL
Date Analyzed:	04/25/2007 2201		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0074	0.30
Bis(2-chloroethyl)ether	ND		0.018	0.20
2-Chlorophenol	ND		0.022	0.20
1,3-Dichlorobenzene	ND		0.011	0.20
1,4-Dichlorobenzene	ND		0.012	0.20
Benzyl alcohol	ND		0.013	0.20
1,2-Dichlorobenzene	ND		0.011	0.20
2-Methylphenol	ND		0.038	0.20
Bis(2-chloroisopropyl) ether	ND		0.0088	0.20
3 & 4 Methylphenol	ND		0.017	0.40
N-Nitrosodi-n-propylamine	ND		0.020	0.20
Hexachloroethane	ND		0.013	0.30
Nitrobenzene	ND		0.0075	0.20
Isophorone	ND		0.011	0.20
2-Nitrophenol	ND		0.021	0.20
2,4-Dimethylphenol	ND		0.018	1.0
Benzoic acid	ND		0.021	1.0
Bis(2-chloroethoxy)methane	ND		0.0095	0.20
2,4-Dichlorophenol	ND		0.013	0.20
1,2,4-Trichlorobenzene	ND		0.010	0.20
Naphthalene	0.010	J	0.0014	0.20
4-Chloroaniline	ND		0.019	0.20
Hexachlorobutadiene	ND		0.016	0.30
4-Chloro-3-methylphenol	ND		0.014	0.20
2-Methylnaphthalene	0.0095	J	0.0055	0.10
Hexachlorocyclopentadiene	ND		0.012	1.0
2,4,6-Trichlorophenol	ND		0.010	0.30
2,4,5-Trichlorophenol	ND		0.0085	0.20
2-Chloronaphthalene	ND		0.0030	0.030
2-Nitroaniline	ND		0.011	0.20
Dimethyl phthalate	ND		0.012	0.20
Acenaphthylene	ND		0.0026	0.040
2,6-Dinitrotoluene	ND		0.014	0.20
3-Nitroaniline	ND		0.056	0.20
Acenaphthene	0.015	J	0.0012	0.050
2,4-Dinitrophenol	ND		0.058	2.5
4-Nitrophenol	ND		0.10	1.0
Dibenzofuran	ND		0.0098	0.20
2,4-Dinitrotoluene	ND		0.012	0.20
Diethyl phthalate	0.014	J	0.0093	0.20
4-Chlorophenyl phenyl ether	ND		0.012	0.20
Fluorene	0.0068	J	0.0042	0.030
4-Nitroaniline	ND		0.018	0.30

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Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040135

Lab Sample ID: 580-5689-23

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009211.D
Dilution:	1.0		Initial Weight/Volume: 995 mL
Date Analyzed:	04/25/2007 2201		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.053	2.0
N-Nitrosodiphenylamine	ND		0.013	0.20
4-Bromophenyl phenyl ether	ND		0.010	0.20
Hexachlorobenzene	ND		0.0082	0.20
Pentachlorophenol	ND		0.013	0.35
Phenanthrene	0.0046	J	0.0024	0.040
Anthracene	ND		0.0019	0.020
Di-n-butyl phthalate	0.004	J	0.0088	0.20
Fluoranthene	0.0097	J	0.0027	0.025
Pyrene	0.015	J	0.0020	0.030
Butyl benzyl phthalate	0.10	J	0.024	0.30
3,3'-Dichlorobenzidine	ND		0.16	1.0
Benzo[a]anthracene	ND		0.0033	0.030
Chrysene	ND		0.0045	0.020
Di-n-octyl phthalate	ND		0.018	0.20
Benzo[a]pyrene	ND		0.0027	0.020
Indeno[1,2,3-cd]pyrene	ND		0.0051	0.030
Dibenz(a,h)anthracene	ND		0.0046	0.030
Benzo[g,h,i]perylene	ND		0.0060	0.030
Carbazole	ND		0.0090	0.20
1-Methylnaphthalene	0.0081	J	0.0052	0.030
Benzo[b]fluoranthene	ND		0.0046	0.040
Benzo[k]fluoranthene	ND		0.0055	0.030
Surrogate	%Rec		Acceptance Limits	
2-Fluorophenol	27		10 - 120	
Phenol-d5	18		10 - 102	
Nitrobenzene-d5	75		34 - 146	
2-Fluorobiphenyl	64		35 - 143	
2,4,6-Tribromophenol	67		29 - 151	
Terphenyl-d14	74		35 - 166	

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040135

Lab Sample ID: 580-5689-23

Client Matrix: Water

Date Sampled: 04/21/2007 0000


Date Received: 04/23/2007 1235


8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C
Preparation: 3510C
Dilution: .10
Date Analyzed: 04/26/2007 1607
Date Prepared: 04/25/2007 1300

Analysis Batch: 580-18102
Prep Batch: 580-18063

Instrument ID: SEA040
Lab File ID: ak009225.D
Initial Weight/Volume: 995 mL
Final Weight/Volume: 1 mL
Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate	16	Br 	0.32	15


5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040136

Lab Sample ID: 580-5689-24

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009228.D

Dilution: 1.0

Initial Weight/Volume: 1020 mL

Date Analyzed: 04/26/2007 1730

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0073	0.20
Bis(2-chloroethyl)ether	ND		0.018	0.20
2-Chlorophenol	ND		0.022	0.20
1,3-Dichlorobenzene	ND		0.011	0.20
1,4-Dichlorobenzene	ND		0.012	0.20
Benzyl alcohol	ND		0.013	0.20
1,2-Dichlorobenzene	ND		0.011	0.20
2-Methylphenol	ND		0.037	0.20
Bis(2-chloroisopropyl) ether	ND		0.0086	0.20
3 & 4 Methylphenol	ND		0.017	0.39
N-Nitrosodi-n-propylamine	ND		0.020	0.20
Hexachloroethane	ND		0.013	0.29
Nitrobenzene	ND		0.0074	0.20
Isophorone	ND		0.011	0.20
2-Nitrophenol	ND		0.021	0.20
2,4-Dimethylphenol	ND		0.018	0.98
Benzoic acid	ND		0.021	0.98
Bis(2-chloroethoxy)methane	ND		0.0093	0.20
2,4-Dichlorophenol	ND		0.013	0.20
1,2,4-Trichlorobenzene	ND		0.0098	0.20
4-Chloroaniline	ND		0.019	0.20
Hexachlorobutadiene	ND		0.016	0.29
4-Chloro-3-methylphenol	ND		0.014	0.20
2-Methylnaphthalene	4.7		0.0054	0.098
Hexachlorocyclopentadiene	ND		0.012	0.98
2,4,6-Trichlorophenol	ND		0.0098	0.29
2,4,5-Trichlorophenol	ND		0.0083	0.20
2-Chloronaphthalene	ND		0.0029	0.029
2-Nitroaniline	ND		0.011	0.20
Dimethyl phthalate	ND		0.012	0.20
Acenaphthylene	ND		0.0025	0.039
2,6-Dinitrotoluene	ND		0.014	0.20
3-Nitroaniline	ND		0.055	0.20
Acenaphthene	2.4		0.0012	0.049
2,4-Dinitrophenol	ND		0.057	2.5
4-Nitrophenol	ND		0.16	0.98
Dibenzofuran	ND		0.0096	0.20
2,4-Dinitrotoluene	ND		0.012	0.20
Diethyl phthalate	ND		0.0091	0.20
4-Chlorophenyl phenyl ether	ND		0.012	0.20
Fluorene	2.1		0.0041	0.029
4-Nitroaniline	ND		0.018	0.29
4,6-Dinitro-2-methylphenol	ND		0.052	2.0

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040136

Lab Sample ID: 580-5689-24

Date Sampled: 04/21/2007 0000

Client Matrix: Water

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009228.D
Dilution:	1.0		Initial Weight/Volume: 1020 mL
Date Analyzed:	04/26/2007 1730		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
N-Nitrosodiphenylamine	ND		0.013	0.20
4-Bromophenyl phenyl ether	ND		0.0098	0.20
Hexachlorobenzene	ND		0.0080	0.20
Pentachlorophenol	ND		0.013	0.34
Phenanthrene	4.0		0.0024	0.039
Anthracene	0.73		0.0019	0.020
Di-n-butyl phthalate	ND		0.0086	0.20
Fluoranthene	0.26		0.0026	0.025
Pyrene	1.2		0.0020	0.029
Butyl benzyl phthalate	ND		0.024	0.29
3,3'-Dichlorobenzidine	ND		0.16	0.98
Benzo[a]anthracene	0.37		0.0032	0.029
Chrysene	0.51		0.0044	0.020
Bis(2-ethylhexyl) phthalate	0.27		0.031	1.5
Di-n-octyl phthalate	ND		0.018	0.20
Benzo[a]pyrene	0.20		0.0026	0.020
Indeno[1,2,3-cd]pyrene	ND		0.0050	0.029
Dibenz(a,h)anthracene	ND		0.0045	0.029
Benzo[g,h,i]perylene	0.11		0.0059	0.029
Carbazole	0.48		0.0088	0.20
Benzo[b]fluoranthene	0.12		0.0045	0.039
Benzo[k]fluoranthene	0.021	J	0.0054	0.029
Surrogate	%Rec		Acceptance Limits	
2-Fluorophenol	27		10 - 120	
Phenol-d5	9	X I	10 - 102	
Nitrobenzene-d5	116		34 - 146	
2-Fluorobiphenyl	57		35 - 143	
2,4,6-Tribromophenol	71		29 - 151	
Terphenyl-d14	80		35 - 166	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040136

Lab Sample ID: 580-5689-24

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009227.D

Dilution: 10

Initial Weight/Volume: 1020 mL

Date Analyzed: 04/26/2007 1702

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	5.0		0.014	2.0
1-Methylnaphthalene	20		0.051	0.29

MIN 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040137

Lab Sample ID: 580-5689-25

Date Sampled: 04/21/2007 0000

Client Matrix: Water

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 05/01/2007 1638
Date Prepared: 04/25/2007 1300

Analysis Batch: 580-18102
Prep Batch: 580-18063

Instrument ID: SEA040
Lab File ID: ak009335.D
Initial Weight/Volume: 985 mL
Final Weight/Volume: 1 mL
Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0075	0.30
Bis(2-chloroethyl)ether	0.028	J	0.018	0.20
2-Chlorophenol	ND		0.022	0.20
1,3-Dichlorobenzene	ND		0.011	0.20
1,4-Dichlorobenzene	ND		0.012	0.20
Benzyl alcohol	ND		0.013	0.20
1,2-Dichlorobenzene	0.037	J	0.011	0.20
2-Methylphenol	ND		0.039	0.20
Bis(2-chloroisopropyl) ether	ND		0.0089	0.20
3 & 4 Methylphenol	ND		0.017	0.41
N-Nitrosodi-n-propylamine	ND		0.020	0.20
Hexachloroethane	ND		0.013	0.30
Nitrobenzene	ND		0.0076	0.20
Isophorone	ND		0.011	0.20
2-Nitrophenol	ND		0.021	0.20
2,4-Dimethylphenol	ND		0.018	1.0
Benzoic acid	ND		0.021	1.0
Bis(2-chloroethoxy)methane	ND		0.0096	0.20
2,4-Dichlorophenol	ND		0.043	0.20
1,2,4-Trichlorobenzene	ND		0.010	0.20
Naphthalene	ND		0.0014	0.20
4-Chloroaniline	ND		0.019	0.20
Hexachlorobutadiene	ND		0.016	0.30
4-Chloro-3-methylphenol	ND		0.014	0.20
2-Methylnaphthalene	ND		0.0056	0.10
Hexachlorocyclopentadiene	ND		0.012	1.0
2,4,6-Trichlorophenol	ND		0.040	0.30
2,4,5-Trichlorophenol	ND		0.0086	0.20
2-Chloronaphthalene	ND		0.0030	0.030
2-Nitroaniline	ND		0.011	0.20
Dimethyl phthalate	ND		0.012	0.20
Acenaphthylene	ND		0.0026	0.041
2,6-Dinitrotoluene	ND		0.014	0.20
3-Nitroaniline	ND		0.057	0.20
Acenaphthene	0.11		0.0012	0.051
2,4-Dinitrophenol	ND		0.059	2.5
4-Nitrophenol	ND		0.16	1.0
Dibenzofuran	ND		0.0099	0.20
2,4-Dinitrotoluene	ND		0.012	0.20
Diethyl phthalate	ND		0.0094	0.20
4-Chlorophenyl phenyl ether	ND		0.012	0.20
Fluorene	0.14		0.0043	0.030
4-Nitroaniline	ND		0.018	0.30

mw 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040137

Lab Sample ID: 580-5689-25

Date Sampled: 04/21/2007 0000

Client Matrix: Water

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009335.D
Dilution:	1.0		Initial Weight/Volume: 985 mL
Date Analyzed:	05/01/2007 1638		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.054	2.0
N-Nitrosodiphenylamine	ND		0.013	0.20
4-Bromophenyl phenyl ether	ND		0.010	0.20
Hexachlorobenzene	ND		0.0083	0.20
Pentachlorophenol	ND		0.013	0.36
Phenanthrene	0.021	J	0.0024	0.041
Anthracene	0.012	J	0.0019	0.020
Di-n-butyl phthalate	0.078	J	0.0089	0.20
Fluoranthene	ND		0.0027	0.025
Pyrene	ND		0.0020	0.030
Butyl benzyl phthalate	0.23	J	0.024	0.30
3,3'-Dichlorobenzidine	ND		0.16	1.0
Benzo[a]anthracene	ND		0.0034	0.030
Chrysene	ND		0.0046	0.020
Di-n-octyl phthalate	ND		0.018	0.20
Benzo[a]pyrene	ND		0.0027	0.020
Indeno[1,2,3-cd]pyrene	ND		0.0052	0.030
Dibenz(a,h)anthracene	ND		0.0047	0.030
Benzo[g,h,i]perylene	ND		0.0061	0.030
Carbazole	ND		0.0091	0.20
1-Methylnaphthalene	ND		0.0053	0.030
Benzo[b]fluoranthene	ND		0.0047	0.041
Benzo[k]fluoranthene	ND		0.0056	0.030
Surrogate	%Rec		Acceptance Limits	
2-Fluorophenol	0	XI	10 - 120	
Phenol-d5	7	XI	10 - 102	
Nitrobenzene-d5	72		34 - 146	
2-Fluorobiphenyl	68		35 - 143	
2,4,6-Tribromophenol	69		29 - 151	
Terphenyl-d14	67		35 - 166	

MW
524-01

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040137

Lab Sample ID: 580-5689-25

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009248.D

Dilution: 50

Initial Weight/Volume: 985 mL

Date Analyzed: 04/27/2007 1036

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate	120	EMV	1.6	76

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040138

Lab Sample ID: 580-5689-26

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch:	580-18063	Lab File ID:	ak009231.D
Dilution:	1.0			Initial Weight/Volume:	970 mL
Date Analyzed:	04/26/2007 1852			Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0076	0.31
Bis(2-chloroethyl)ether	ND		0.019	0.21
2-Chlorophenol	ND		0.023	0.21
1,3-Dichlorobenzene	ND		0.011	0.21
1,4-Dichlorobenzene	ND		0.012	0.21
Benzyl alcohol	ND		0.013	0.21
1,2-Dichlorobenzene	ND		0.011	0.21
2-Methylphenol	ND		0.039	0.21
Bis(2-chloroisopropyl) ether	ND		0.0091	0.21
3 & 4 Methylphenol	ND		0.018	0.41
N-Nitrosodi-n-propylamine	ND		0.021	0.21
Hexachloroethane	ND		0.013	0.31
Nitrobenzene	ND		0.0077	0.21
Isophorone	ND		0.011	0.21
2-Nitrophenol	ND		0.022	0.21
2,4-Dimethylphenol	ND		0.019	1.0
Benzoic acid	ND		0.022	1.0
Bis(2-chloroethoxy)methane	ND		0.0098	0.21
2,4-Dichlorophenol	ND		0.013	0.21
1,2,4-Trichlorobenzene	ND		0.010	0.21
Naphthalene	ND		0.0014	0.21
4-Chloroaniline	ND		0.020	0.21
Hexachlorobutadiene	ND		0.016	0.31
4-Chloro-3-methylphenol	ND		0.014	0.21
2-Methylnaphthalene	ND		0.0057	0.10
Hexachlorocyclopentadiene	ND		0.012	1.0
2,4,6-Trichlorophenol	ND		0.010	0.31
2,4,5-Trichlorophenol	ND		0.0088	0.21
2-Chloronaphthalene	ND		0.0031	0.031
2-Nitroaniline	ND		0.011	0.21
Dimethyl phthalate	ND		0.012	0.21
Acenaphthylene	ND		0.0027	0.041
2,6-Dinitrotoluene	ND		0.014	0.21
3-Nitroaniline	ND		0.058	0.21
Acenaphthene	0.17		0.0012	0.052
2,4-Dinitrophenol	ND		0.060	2.6
4-Nitrophenol	ND		0.16	1.0
Dibenzofuran	0.020	J	0.010	0.21
2,4-Dinitrotoluene	ND		0.012	0.21
Diethyl phthalate	ND		0.0096	0.21
4-Chlorophenyl phenyl ether	ND		0.012	0.21
Fluorene	0.40		0.0043	0.031
4-Nitroaniline	ND		0.019	0.31

MW 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040138

Lab Sample ID: 580-5689-26

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch:	580-18063	Lab File ID:	ak009231.D
Dilution:	1.0			Initial Weight/Volume:	970 mL
Date Analyzed:	04/26/2007 1852			Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.055	2.1 U
N-Nitrosodiphenylamine	ND		0.013	0.21 U
4-Bromophenyl phenyl ether	ND		0.010	0.21 U
Hexachlorobenzene	ND		0.0085	0.21 U
Pentachlorophenol	ND		0.013	0.36 U
Phenanthrene	0.078		0.0025	0.041 U
Anthracene	ND		0.0020	0.021 U
Di-n-butyl phthalate	0.003	J	0.0091	0.21 U
Fluoranthene	0.034		0.0028	0.026 U
Pyrene	0.071		0.0021	0.031 U
Butyl benzyl phthalate	ND		0.025	0.31 U
3,3'-Dichlorobenzidine	ND		0.16	1.0 U
Benzo[a]anthracene	0.017	J	0.0034	0.031 U
Chrysene	0.067		0.0046	0.021 U
Di-n-octyl phthalate	ND	J	0.019	0.21 U
Benzo[a]pyrene	ND		0.0028	0.021 U
Indeno[1,2,3-cd]pyrene	ND		0.0053	0.031 U
Dibenz(a,h)anthracene	ND		0.0047	0.031 U
Benzo[g,h,i]perylene	0.037		0.0062	0.031 U
Carbazole	0.022	J	0.0093	0.21 U
1-Methylnaphthalene	ND		0.0054	0.031 U
Benzo[b]fluoranthene	0.038	J	0.0047	0.041 U
Benzo[k]fluoranthene	ND		0.0057	0.031 U

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	18	10 - 120
Phenol-d5	11	10 - 102
Nitrobenzene-d5	80	34 - 146
2-Fluorobiphenyl	52	35 - 143
2,4,6-Tribromophenol	66	29 - 151
Terphenyl-d14	76	35 - 166

MM
5/24/07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040138

Lab Sample ID: 580-5689-26

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009249.D

Dilution: 50

Initial Weight/Volume: 970 mL

Date Analyzed: 04/27/2007 1103

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate	85	<i>Am</i>	1.6	77

mm
52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040139

Lab Sample ID: 580-5689-27

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 04/26/2007 1920
Date Prepared: 04/25/2007 1300

Analysis Batch: 580-18102
Prep Batch: 580-18063

Instrument ID: SEA040
Lab File ID: ak009232.D
Initial Weight/Volume: 995 mL
Final Weight/Volume: 1 mL
Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0074	0.30
Bis(2-chloroethyl) ether	ND		0.018	0.20
2-Chlorophenol	ND		0.022	0.20
1,3-Dichlorobenzene	ND		0.011	0.20
1,4-Dichlorobenzene	0.051	J	0.012	0.20
Benzyl alcohol	ND		0.013	0.20
1,2-Dichlorobenzene	0.21		0.011	0.20
2-Methylphenol	ND		0.038	0.20
Bis(2-chloroisopropyl) ether	ND		0.0088	0.20
3 & 4 Methylphenol	ND		0.017	0.40
N-Nitrosodi-n-propylamine	ND		0.020	0.20
Hexachloroethane	ND		0.013	0.30
Nitrobenzene	ND		0.0075	0.20
Isophorone	ND		0.011	0.20
2-Nitrophenol	ND		0.021	0.20
2,4-Dimethylphenol	ND		0.018	1.0
Benzoic acid	ND		0.021	1.0
Bis(2-chloroethoxy)methane	ND		0.0095	0.20
2,4-Dichlorophenol	ND		0.013	0.20
1,2,4-Trichlorobenzene	ND		0.010	0.20
4-Chloroaniline	ND		0.019	0.20
Hexachlorobutadiene	ND		0.016	0.30
4-Chloro-3-methylphenol	ND		0.014	0.20
Hexachlorocyclopentadiene	ND		0.012	1.0
2,4,6-Trichlorophenol	ND		0.010	0.30
2,4,5-Trichlorophenol	ND		0.0085	0.20
2-Chloronaphthalene	ND		0.0030	0.030
2-Nitroaniline	ND		0.011	0.20
Dimethyl phthalate	ND		0.012	0.20
Acenaphthylene	ND		0.0026	0.040
2,6-Dinitrotoluene	ND		0.014	0.20
3-Nitroaniline	ND		0.056	0.20
Acenaphthene	2.9		0.0012	0.050
2,4-Dinitrophenol	ND		0.058	2.5
4-Nitrophenol	ND		0.16	1.0
Dibenzofuran	ND		0.0098	0.20
2,4-Dinitrotoluene	ND		0.012	0.20
Diethyl phthalate	ND		0.0093	0.20
4-Chlorophenyl phenyl ether	ND		0.012	0.20
Fluorene	3.9		0.0042	0.030
4-Nitroaniline	ND		0.018	0.30
4,6-Dinitro-2-methylphenol	ND		0.063	2.0
N-Nitrosodiphenylamine	ND		0.013	0.20

MW 5/24/07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040139

Lab Sample ID: 580-5689-27

Date Sampled: 04/21/2007 0000

Client Matrix: Water

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009232.D
Dilution:	1.0		Initial Weight/Volume: 995 mL
Date Analyzed:	04/26/2007 1920		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
4-Bromophenyl phenyl ether	ND		0.010	0.20
Hexachlorobenzene	ND		0.0082	0.20
Pentachlorophenol	ND		0.013	0.35
Phenanthrene	2.3		0.0024	0.040
Anthracene	0.12		0.0019	0.020
Di-n-butyl phthalate	0.11	J	0.0088	0.20
Fluoranthene	0.037		0.0027	0.025
Pyrene	0.041		0.0020	0.030
Butyl benzyl phthalate	0.26	J	0.024	0.30
3,3'-Dichlorobenzidine	ND		0.16	1.0
Benzo[a]anthracene	ND		0.0033	0.030
Chrysene	ND		0.0045	0.020
Di-n-octyl phthalate	ND		0.018	0.20
Benzo[a]pyrene	ND		0.0027	0.020
Indeno[1,2,3-cd]pyrene	ND		0.0051	0.030
Dibenz(a,h)anthracene	ND		0.0046	0.030
Benzo[g,h,i]perylene	ND		0.0060	0.030
Carbazole	0.13	J	0.0090	0.20
Benzo[b]fluoranthene	ND		0.0046	0.040
Benzo[k]fluoranthene	ND		0.0055	0.030
Surrogate	%Rec		Acceptance Limits	
2-Fluorophenol	17		10 - 120	
Phenol-d5	9	X I	10 - 102	
Nitrobenzene-d5	87		34 - 146	
2-Fluorobiphenyl	77		35 - 143	
2,4,6-Tribromophenol	87		29 - 151	
Terphenyl-d14	79		35 - 166	

mm
5/24/07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040139

Lab Sample ID: 580-5689-27

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009251.D

Dilution: 10

Initial Weight/Volume: 995 mL

Date Analyzed: 04/27/2007 1158

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	7.1		0.014	2.0
2-Methylnaphthalene	34		0.055	1.0
1-Methylnaphthalene	29		0.052	0.30

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040139

Lab Sample ID: 580-5689-27

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID:	ak009250.D
Dilution:	100		Initial Weight/Volume:	995 mL
Date Analyzed:	04/27/2007 1130		Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate	390	<i>Amw</i>	3.2	150

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040140

Lab Sample ID: 580-5689-28

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C
Preparation: 3510C
Dilution: 10
Date Analyzed: 04/26/2007 1947
Date Prepared: 04/25/2007 1300

Analysis Batch: 580-18102
Prep Batch: 580-18063

Instrument ID: SEA040
Lab File ID: ak009233.D
Initial Weight/Volume: 1055 mL
Final Weight/Volume: 1 mL
Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	R ND		0.070	2.8
Bis(2-chloroethyl)ether	ND		0.17	1.9
2-Chlorophenol	R ND		0.21	1.9
1,3-Dichlorobenzene	ND		0.10	1.9
1,4-Dichlorobenzene	ND		0.11	1.9
Benzyl alcohol	R ND		0.12	1.9
1,2-Dichlorobenzene	0.53	J	0.10	1.9
2-Methylphenol	R ND		0.36	1.9
Bis(2-chloroisopropyl) ether	ND		0.083	1.9
3 & 4 Methylphenol	R ND		0.16	3.8
N-Nitrosodi-n-propylamine	ND		0.19	1.9
Hexachloroethane	ND		0.12	2.8
Nitrobenzene	ND		0.071	1.9
Isophorone	ND		0.10	1.9
2-Nitrophenol	R ND		0.20	1.9
2,4-Dimethylphenol	R ND		0.17	9.5
Benzoic acid	R ND		0.20	9.5
Bis(2-chloroethoxy)methane	ND		0.090	1.9
2,4-Dichlorophenol	R ND		0.12	1.9
1,2,4-Trichlorobenzene	ND		0.095	1.9
4-Chloroaniline	ND		0.18	1.9
Hexachlorobutadiene	ND		0.15	2.8
4-Chloro-3-methylphenol	R ND		0.13	1.9
Hexachlorocyclopentadiene	ND		0.11	9.5
2,4,6-Trichlorophenol	R ND		0.095	2.8
2,4,5-Trichlorophenol	R ND		0.084	1.9
2-Chloronaphthalene	ND		0.028	0.28
2-Nitroaniline	ND		0.10	1.9
Dimethyl phthalate	ND		0.11	1.9
Acenaphthylene	ND		0.025	0.38
2,6-Dinitrotoluene	ND		0.13	1.9
3-Nitroaniline	ND		0.53	1.9
Acenaphthene	9.3		0.011	0.47
2,4-Dinitrophenol	R ND		0.55	24
4-Nitrophenol	R ND		1.5	9.5
Dibenzofuran	ND		0.093	1.9
2,4-Dinitrotoluene	ND		0.11	1.9
Diethyl phthalate	ND		0.088	1.9
4-Chlorophenyl phenyl ether	ND		0.11	1.9
Fluorene	34		0.040	0.28
4-Nitroaniline	ND		0.17	2.8
4,6-Dinitro-2-methylphenol	19	J	0.50	19
N-Nitrosodiphenylamine	12		0.12	1.9

NW 524-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040140

Lab Sample ID: 580-5689-28

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009233.D
Dilution:	10		Initial Weight/Volume: 1055 mL
Date Analyzed:	04/26/2007 1947		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
4-Bromophenyl phenyl ether	ND		0.095	1.9 U
Hexachlorobenzene	ND		0.078	1.9 U
Pentachlorophenol	ND		0.12	3.3 U
Anthracene	4.4		0.018	0.19 U
Di-n-butyl phthalate	ND		0.083	1.9 U
Fluoranthene	4.2		0.026	0.24 U
Pyrene	8.6		0.019	0.28 U
Butyl benzyl phthalate	ND		0.23	2.8 U
3,3'-Dichlorobenzidine	ND		1.5	9.5 U
Benzo[a]anthracene	1.6		0.031	0.28 U
Chrysene	3.0		0.043	0.19 U
Bis(2-ethylhexyl) phthalate	2.0	JB	0.30	14 U
Di-n-octyl phthalate	ND		0.17	1.9 U
Benzo[a]pyrene	0.85		0.026	0.19 U
Indeno[1,2,3-cd]pyrene	ND		0.048	0.28 U
Dibenz(a,h)anthracene	ND		0.044	0.28 U
Benzo[g,h,i]perylene	0.51		0.057	0.28 U
Carbazole	ND		0.085	1.9 U
Benzo[b]fluoranthene	0.84		0.044	0.38 U
Benzo[k]fluoranthene	ND		0.052	0.28 U
Surrogate	%Rec		Acceptance Limits	
2-Fluorophenol	2	XI	10 - 120	
Phenol-d5	7	XI	10 - 102	
Nitrobenzene-d5	561	XI	34 - 146	
2-Fluorobiphenyl	64		35 - 143	
2,4,6-Tribromophenol	130		29 - 151	
Terphenyl-d14	105		35 - 166	

MW
52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040140

Lab Sample ID: 580-5689-28

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009252.D

Dilution: 100

Initial Weight/Volume: 1055 mL

Date Analyzed: 04/27/2007 1225

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	63		0.13	19
2-Methylnaphthalene	270		0.52	9.5
Phenanthrene	59		0.23	3.8
1-Methylnaphthalene	210		0.49	2.8

MW
5247

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040141

Lab Sample ID: 580-5689-29

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009336.D

Dilution: 1.0

Initial Weight/Volume: 1000 mL

Date Analyzed: 05/01/2007 1705

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0074	0.30
Bis(2-chloroethyl) ether	ND		0.018	0.20
2-Chlorophenol	ND		0.022	0.20
1,3-Dichlorobenzene	ND		0.011	0.20
1,4-Dichlorobenzene	ND		0.012	0.20
Benzyl alcohol	ND		0.013	0.20
1,2-Dichlorobenzene	0.048	J	0.011	0.20
2-Methylphenol	ND		0.038	0.20
Bis(2-chloroisopropyl) ether	ND		0.0088	0.20
3 & 4 Methylphenol	ND		0.017	0.40
N-Nitrosodi-n-propylamine	ND		0.020	0.20
Hexachloroethane	ND		0.013	0.30
Nitrobenzene	ND		0.0075	0.20
Isophorone	ND		0.011	0.20
2-Nitrophenol	ND		0.021	0.20
2,4-Dimethylphenol	ND		0.018	1.0
Benzoic acid	ND		0.021	1.0
Bis(2-chloroethoxy)methane	ND		0.0095	0.20
2,4-Dichlorophenol	ND		0.013	0.20
1,2,4-Trichlorobenzene	ND		0.010	0.20
Naphthalene	ND		0.0014	0.20
4-Chloroaniline	ND		0.019	0.20
Hexachlorobutadiene	ND		0.016	0.30
4-Chloro-3-methylphenol	ND		0.014	0.20
2-Methylnaphthalene	ND		0.0055	0.10
Hexachlorocyclopentadiene	ND		0.012	1.0
2,4,6-Trichlorophenol	ND		0.010	0.30
2,4,5-Trichlorophenol	ND		0.0085	0.20
2-Chloronaphthalene	ND		0.0030	0.030
2-Nitroaniline	ND		0.011	0.20
Dimethyl phthalate	ND		0.012	0.20
Acenaphthylene	ND		0.0026	0.040
2,6-Dinitrotoluene	ND		0.014	0.20
3-Nitroaniline	ND		0.056	0.20
Acenaphthene	0.60		0.0012	0.050
2,4-Dinitrophenol	ND		0.058	2.5
4-Nitrophenol	ND		0.16	1.0
Dibenzofuran	ND		0.0098	0.20
2,4-Dinitrotoluene	ND		0.012	0.20
Diethyl phthalate	ND		0.0093	0.20
4-Chlorophenyl phenyl ether	ND		0.012	0.20
Fluorene	0.40		0.0042	0.030
4-Nitroaniline	ND		0.018	0.30

MAN 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040141

Lab Sample ID: 580-5689-29

Date Sampled: 04/21/2007 0000

Client Matrix: Water

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch:	580-18102	Instrument ID:	SEA040
Preparation:	3510C	Prep Batch:	580-18063	Lab File ID:	ak009336.D
Dilution:	1.0			Initial Weight/Volume:	1000 mL
Date Analyzed:	05/01/2007 1705			Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 1300			Injection Volume:	

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.053	2.0 <i>Up</i>
N-Nitrosodiphenylamine	ND		0.013	0.20 <i>U</i>
4-Bromophenyl phenyl ether	ND		0.010	0.20 <i>U</i>
Hexachlorobenzene	ND		0.0082	0.20 <i>U</i>
Pentachlorophenol	ND		0.013	0.35 <i>U</i>
Phenanthrene	0.026	J	0.0024	0.040
Anthracene	0.019	J	0.0019	0.020
Di-n-butyl phthalate	0.098	J	0.0088	0.20 <i>U</i>
Fluoranthene	ND		0.0027	0.025 <i>U</i>
Pyrene	ND		0.0020	0.030 <i>U</i>
Butyl benzyl phthalate	0.092	J	0.024	0.30 <i>U</i>
3,3'-Dichlorobenzidine	ND		0.16	1.0 <i>U</i>
Benzo[a]anthracene	ND		0.0033	0.030 <i>U</i>
Chrysene	ND		0.0045	0.020 <i>U</i>
Di-n-octyl phthalate	0.080	J	0.018	0.20 <i>U</i>
Benzo[a]pyrene	ND		0.0027	0.020 <i>U</i>
Indeno[1,2,3-cd]pyrene	ND		0.0051	0.030 <i>U</i>
Dibenz(a,h)anthracene	ND		0.0046	0.030 <i>U</i>
Benzo[g,h,i]perylene	ND		0.0060	0.030 <i>U</i>
Carbazole	ND		0.0090	0.20 <i>U</i>
1-Methylnaphthalene	ND		0.0052	0.030 <i>U</i>
Benzo[b]fluoranthene	ND		0.0046	0.040 <i>U</i>
Benzo[k]fluoranthene	ND		0.0055	0.030 <i>U</i>
Surrogate	%Rec		Acceptance Limits	
2-Fluorophenol	11		10 - 120	
Phenol-d5	8	XI	10 - 102	
Nitrobenzene-d5	72		34 - 146	
2-Fluorobiphenyl	68		35 - 143	
2,4,6-Tribromophenol	71		29 - 151	
Terphenyl-d14	60		35 - 166	

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040141

Lab Sample ID: 580-5689-29

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009253.D

Dilution: 50

Initial Weight/Volume: 1000 mL

Date Analyzed: 04/27/2007 1253

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate	210	PMW	1.6	75

QMW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040142

Lab Sample ID: 580-5689-30

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009235.D

Dilution: 1.0

Initial Weight/Volume: 970 mL

Date Analyzed: 04/26/2007 2042

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0076	0.31
Bis(2-chloroethyl)ether	ND		0.019	0.21
2-Chlorophenol	ND		0.023	0.21
1,3-Dichlorobenzene	ND		0.011	0.21
1,4-Dichlorobenzene	ND		0.012	0.21
Benzyl alcohol	ND		0.013	0.21
1,2-Dichlorobenzene	ND		0.011	0.21
2-Methylphenol	ND		0.039	0.21
Bis(2-chloroisopropyl) ether	ND		0.0091	0.21
3 & 4 Methylphenol	ND		0.018	0.41
N-Nitrosodi-n-propylamine	ND		0.021	0.21
Hexachloroethane	ND		0.013	0.31
Nitrobenzene	ND		0.0077	0.21
Isophorone	ND		0.011	0.21
2-Nitrophenol	ND		0.022	0.21
2,4-Dimethylphenol	ND		0.019	1.0
Benzoic acid	ND		0.022	1.0
Bis(2-chloroethoxy)methane	ND		0.0098	0.21
2,4-Dichlorophenol	ND		0.013	0.21
1,2,4-Trichlorobenzene	ND		0.010	0.21
Naphthalene	ND		0.0014	0.21
4-Chloroaniline	ND		0.020	0.21
Hexachlorobutadiene	ND		0.016	0.31
4-Chloro-3-methylphenol	ND		0.014	0.21
2-Methylnaphthalene	ND		0.0057	0.10
Hexachlorocyclopentadiene	ND		0.012	1.0
2,4,6-Trichlorophenol	ND		0.010	0.31
2,4,5-Trichlorophenol	ND		0.0088	0.21
2-Chloronaphthalene	ND		0.0031	0.031
2-Nitroaniline	ND		0.011	0.21
Dimethyl phthalate	ND		0.012	0.21
Acenaphthylene	ND		0.0027	0.041
2,6-Dinitrotoluene	ND		0.014	0.21
3-Nitroaniline	ND		0.058	0.21
Acenaphthene	ND		0.0012	0.052
2,4-Dinitrophenol	ND		0.060	2.6
4-Nitrophenol	ND		0.16	1.0
Dibenzofuran	ND		0.010	0.21
2,4-Dinitrotoluene	ND		0.012	0.21
Diethyl phthalate	ND		0.0096	0.21
4-Chlorophenyl phenyl ether	ND		0.012	0.21
Fluorene	ND		0.0043	0.031
4-Nitroaniline	ND		0.019	0.31

MW 524

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040142

Lab Sample ID: 580-5689-30

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009235.D
Dilution:	1.0		Initial Weight/Volume: 970 mL
Date Analyzed:	04/26/2007 2042		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.055	2.1
N-Nitrosodiphenylamine	ND		0.013	0.21
4-Bromophenyl phenyl ether	ND		0.010	0.21
Hexachlorobenzene	ND		0.0085	0.21
Pentachlorophenol	ND		0.013	0.36
Phenanthrene	ND		0.0025	0.041
Anthracene	ND		0.0020	0.021
Di-n-butyl phthalate	0.085	JBW	0.0091	0.21
Fluoranthene	ND		0.0028	0.026
Pyrene	ND		0.0021	0.031
Butyl benzyl phthalate	0.005	JBW	0.025	0.31
3,3'-Dichlorobenzidine	ND		0.16	1.0
Benzo[a]anthracene	ND		0.0034	0.031
Chrysene	ND		0.0046	0.021
Di-n-octyl phthalate	ND		0.019	0.21
Benzo[a]pyrene	ND		0.0028	0.021
Indeno[1,2,3-cd]pyrene	ND		0.0053	0.031
Dibenz(a,h)anthracene	ND		0.0047	0.031
Benzo[g,h,i]perylene	ND		0.0062	0.031
Carbazole	ND		0.0093	0.21
1-Methylnaphthalene	ND		0.0054	0.031
Benzo[b]fluoranthene	ND		0.0047	0.041
Benzo[k]fluoranthene	ND		0.0057	0.031

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	36	10 - 120
Phenol-d5	26	10 - 102
Nitrobenzene-d5	81	34 - 146
2-Fluorobiphenyl	72	35 - 143
2,4,6-Tribromophenol	62	29 - 151
Terphenyl-d14	79	35 - 166

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040142

Lab Sample ID: 580-5689-30

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009254.D

Dilution: 20


Initial Weight/Volume: 970 mL

Date Analyzed: 04/27/2007 1320

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bis(2-ethylhexyl) phthalate	71		0.66	31



52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040143

Lab Sample ID: 580-5689-31

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18102	Instrument ID: SEA040
Preparation:	3510C	Prep Batch: 580-18063	Lab File ID: ak009214.D
Dilution:	1.0		Initial Weight/Volume: 1005 mL
Date Analyzed:	04/25/2007 2323		Final Weight/Volume: 1 mL
Date Prepared:	04/25/2007 1300		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.0074	0.30
Bis(2-chloroethyl)ether	ND		0.018	0.20
2-Chlorophenol	ND		0.022	0.20
1,3-Dichlorobenzene	ND		0.011	0.20
1,4-Dichlorobenzene	ND		0.012	0.20
Benzyl alcohol	ND		0.013	0.20
1,2-Dichlorobenzene	ND		0.011	0.20
2-Methylphenol	ND		0.038	0.20
Bis(2-chloroisopropyl) ether	ND		0.0088	0.20
3 & 4 Methylphenol	ND		0.017	0.40
N-Nitrosodi-n-propylamine	ND		0.020	0.20
Hexachloroethane	ND		0.013	0.30
Nitrobenzene	ND		0.0075	0.20
Isophorone	ND		0.011	0.20
2-Nitrophenol	ND		0.021	0.20
2,4-Dimethylphenol	ND		0.018	1.0
Benzoic acid	ND		0.021	1.0
Bis(2-chloroethoxy)methane	ND		0.0095	0.20
2,4-Dichlorophenol	ND		0.013	0.20
1,2,4-Trichlorobenzene	ND		0.010	0.20
Naphthalene	ND		0.0014	0.20
4-Chloroaniline	ND		0.019	0.20
Hexachlorobutadiene	ND		0.016	0.30
4-Chloro-3-methylphenol	ND		0.014	0.20
2-Methylnaphthalene	ND		0.0055	0.10
Hexachlorocyclopentadiene	ND		0.012	1.0
2,4,6-Trichlorophenol	ND		0.010	0.30
2,4,5-Trichlorophenol	ND		0.0085	0.20
2-Chloronaphthalene	ND		0.0030	0.030
2-Nitroaniline	ND		0.011	0.20
Dimethyl phthalate	ND		0.012	0.20
Acenaphthylene	ND		0.0026	0.040
2,6-Dinitrotoluene	ND		0.014	0.20
3-Nitroaniline	ND		0.056	0.20
Acenaphthene	ND		0.0012	0.050
2,4-Dinitrophenol	ND		0.058	2.5
4-Nitrophenol	ND		0.16	1.0
Dibenzofuran	ND		0.0098	0.20
2,4-Dinitrotoluene	ND		0.012	0.20
Diethyl phthalate	0.018	J	0.0093	0.20
4-Chlorophenyl phenyl ether	ND		0.012	0.20
Fluorene	ND		0.0042	0.030
4-Nitroaniline	ND		0.018	0.30

AMN 524-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040143

Lab Sample ID: 580-5689-31

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C

Analysis Batch: 580-18102

Instrument ID: SEA040

Preparation: 3510C

Prep Batch: 580-18063

Lab File ID: ak009214.D

Dilution: 1.0

Initial Weight/Volume: 1005 mL

Date Analyzed: 04/25/2007 2323

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 1300

Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol	ND		0.053	2.0
N-Nitrosodiphenylamine	ND		0.013	0.20
4-Bromophenyl phenyl ether	ND		0.010	0.20
Hexachlorobenzene	ND		0.0082	0.20
Pentachlorophenol	ND		0.013	0.35
Phenanthrene	ND		0.0024	0.040
Anthracene	0.0026	J	0.0019	0.020
Di-n-butyl phthalate	2.5	B	0.0088	0.20
Fluoranthene	ND		0.0027	0.025
Pyrene	ND		0.0020	0.030
Butyl benzyl phthalate	0.094	J	0.024	0.30
3,3'-Dichlorobenzidine	ND		0.16	1.0
Benzo[a]anthracene	ND		0.0033	0.030
Chrysene	ND		0.0045	0.020
Bis(2-ethylhexyl) phthalate	0.16	J	0.032	1.5
Di-n-octyl phthalate	ND		0.018	0.20
Benzo[a]pyrene	ND		0.0027	0.020
Indeno[1,2,3-cd]pyrene	ND		0.0051	0.030
Dibenz(a,h)anthracene	ND		0.0046	0.030
Benzo[g,h,i]perylene	ND		0.0060	0.030
Carbazole	ND		0.0090	0.20
1-Methylnaphthalene	ND		0.0052	0.030
Benzo[b]fluoranthene	ND		0.0046	0.040
Benzo[k]fluoranthene	ND		0.0055	0.030

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	37	10 - 120
Phenol-d5	24	10 - 102
Nitrobenzene-d5	81	34 - 146
2-Fluorobiphenyl	73	35 - 143
2,4,6-Tribromophenol	74	29 - 151
Terphenyl-d14	83	35 - 166

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040131

Lab Sample ID: 580-5689-32

Client Matrix: Waste

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18154	Instrument ID: SEA040
Preparation:	3580A	Prep Batch: 580-18109	Lab File ID: ak009244.D
Dilution:	10		Initial Weight/Volume: 0.1171 g
Date Analyzed:	04/27/2007 0049		Final Weight/Volume: 10 mL
Date Prepared:	04/26/2007 1040		Injection Volume:

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		23000	85000
Bis(2-chloroethyl)ether		ND		26000	85000
2-Chlorophenol		ND		20000	85000
1,3-Dichlorobenzene		ND		10000	43000
1,4-Dichlorobenzene		ND		6500	43000
Benzyl alcohol		ND		26000	85000
1,2-Dichlorobenzene		ND		15000	43000
2-Methylphenol		ND		24000	85000
Bis(2-chloroisopropyl) ether		ND		29000	130000
3 & 4 Methylphenol		ND		45000	170000
N-Nitrosodi-n-propylamine		ND		22000	85000
Hexachloroethane		ND		18000	85000
Nitrobenzene		ND		13000	85000
Isophorone		ND		22000	85000
2-Nitrophenol		ND		20000	85000
2,4-Dimethylphenol		ND		16000	85000
Benzoic acid		ND		710000	2100000
Bis(2-chloroethoxy)methane		ND		21000	85000
2,4-Dichlorophenol		ND		16000	85000
1,2,4-Trichlorobenzene		ND		8500	43000
Naphthalene		320000		4900	17000
4-Chloroaniline		ND		23000	85000
Hexachlorobutadiene		ND		11000	43000
4-Chloro-3-methylphenol		ND		19000	85000
2-Methylnaphthalene		2400000		2600	17000
Hexachlorocyclopentadiene		ND		21000	85000
2,4,6-Trichlorophenol		ND		28000	130000
2,4,5-Trichlorophenol		ND		20000	85000
2-Chloronaphthalene		ND		1600	17000
2-Nitroaniline		ND		16000	85000
Dimethyl phthalate		ND		6600	85000
Acenaphthylene		ND		2000	17000
2,6-Dinitrotoluene		ND		16000	85000
3-Nitroaniline		ND		25000	85000
Acenaphthene		130000		4900	17000
2,4-Dinitrophenol		ND		180000	850000
4-Nitrophenol		ND		220000	850000
Dibenzofuran		ND		15000	85000
2,4-Dinitrotoluene		ND		12000	85000
Diethyl phthalate		ND		6100	85000
4-Chlorophenyl phenyl ether		ND		14000	85000
Fluorene		360000		2200	17000
4-Nitroaniline		ND		16000	85000

mw 5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040131

Lab Sample ID: 580-5689-32

Date Sampled: 04/20/2007 0000

Client Matrix: Waste

Date Received: 04/23/2007 1235

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 580-18154	Instrument ID: SEA040
Preparation:	3580A	Prep Batch: 580-18109	Lab File ID: ak009244.D
Dilution:	10		Initial Weight/Volume: 0.1171 g
Date Analyzed:	04/27/2007 0049		Final Weight/Volume: 10 mL
Date Prepared:	04/26/2007 1040		Injection Volume:

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
4,6-Dinitro-2-methylphenol		ND		230000	850000
N-Nitrosodiphenylamine		ND		13000	43000
4-Bromophenyl phenyl ether		ND		8500	85000
Hexachlorobenzene		ND		9400	43000
Pentachlorophenol		ND		26000	85000
Phenanthrene		700000		3400	17000
Anthracene		63000		3700	17000
Di-n-butyl phthalate		ND		11000	170000
Fluoranthene		37000		2600	17000
Pyrene		69000		2300	17000
Butyl benzyl phthalate		ND		25000	85000
3,3'-Dichlorobenzidine		ND		7800	170000
Benzo[a]anthracene		17000	J	5600	21000
Chrysene		29000		6400	21000
Bis(2-ethylhexyl) phthalate		ND		200000	1300000
Di-n-octyl phthalate		ND		28000	170000
Benzo[a]pyrene		24000	J	7300	26000
Indeno[1,2,3-cd]pyrene		ND		10000	34000
Dibenz(a,h)anthracene		ND		10000	34000
Benzo[g,h,i]perylene		ND		6200	21000
Carbazole		ND		28000	130000
1-Methylnaphthalene		1700000		7400	26000
Benzo[b]fluoranthene		21000		4600	17000
Benzo[k]fluoranthene		ND		5900	21000
Surrogate	%Rec		Acceptance Limits		
2-Fluorophenol	71		36 - 145		
Phenol-d5	74		38 - 149		
Nitrobenzene-d5	115		38 - 141		
2-Fluorobiphenyl	84		42 - 140		
2,4,6-Tribromophenol	125		28 - 143		
Terphenyl-d14	74		42 - 151		

Handwritten signature and date:
5/24/07



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International Specialists in the Environment

720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: May 24, 2007
TO: Steve Hall, Project Manager, E & E, Seattle, Washington
FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*
SUBJ: **Organic Data Quality Assurance Review, Avery Landing Site,
Avery, Idaho**
REF: TDD: 07-03-0004 PAN: 002233.0193.01SF

The data quality assurance review of 15 solid, 1 waste, and 13 water samples collected from the Avery Landing site located in Avery, Idaho, has been completed. Analysis for Polychlorinated Biphenyls (PCBs - EPA Method 8082) was performed by STL-Seattle, Tacoma, Washington.

The samples were numbered:

Solid	07040102	07040104	07040106	07040108	07040110
	07040114	07040116	07040117	07040119	07040120
	07040122	07040124	07040125	07040127	07040129
Waste	07040131				
Water	07040111	07040132	07040133	07040134	07040135
	07040136	07040137	07040138	07040139	07040140
	07040141	07040142	07040143		

Data Qualifications:

1. Sample Holding Times: Acceptable.

Sample receipt temperature was not provided; the laboratory narrative indicated that sample temperature was acceptable. The samples were collected between April 16 and 21, 2007, were extracted between April 24 and 26, 2007, and were analyzed by April 26, 2007, therefore meeting holding time criteria of less than 7 days between collection and extraction (14 days for soil and waste) and less than 40 days between extraction and analysis.

2. Instrument Performance: Acceptable.

The surrogate retention time percent difference between the initial calibration standards and the remaining standards and samples was $\leq 0.3\%$ for capillary column analyses.



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	07040114	07040116	07040117	07040119	07040120
	07040122	07040124	07040125	07040127	07040129
Waste	07040131				
Water	07040111	07040132	07040133	07040134	07040135
	07040136	07040137	07040138	07040139	07040140
	07040141	07040142	07040143		

Data Qualifications:

1. Sample Holding Times: Acceptable.

Sample receipt temperature was not provided; the laboratory narrative indicated that sample temperature was acceptable. The samples were collected between April 16 and 21, 2007, were extracted between April 24 and 26, 2007, and were analyzed by April 26, 2007, therefore meeting holding time criteria of less than 7 days between collection and extraction (14 days for soil and waste) and less than 40 days between extraction and analysis.

2. Instrument Performance: Acceptable.

The surrogate retention time percent difference between the initial calibration standards and the remaining standards and samples was $\leq 0.3\%$ for capillary column analyses.

3. Initial and Continuing Calibration: Acceptable.

All initial calibration relative standard deviations (RSDs) were less than 15% except for the SMC dichlorobenzidine; no action was taken based on this outlier. All continuing calibration % differences (% D) were less than 15% and were within QC limits.

4. Error Determination: Not Provided.

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. Blanks: Acceptable.

A method blank was prepared at the required frequency of every time samples were extracted for each matrix and for each concentration level, or every 20 samples, whichever is greater, and for each analytical system. No target analytes were detected in any blanks.

6. Performance Evaluation Samples: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. System Monitoring Compounds (SMCs): Satisfactory.

All recoveries of the SMCs were within the established control limits except the SMC tetrachloro-m-xylene with low recoveries in samples 07040111, 07040136, 07040138, 07040139, and 07040141. Sample quantitation limits in these samples were qualified as estimated quantities (UJ).

8. Blank and Matrix Spikes: Acceptable.

Recoveries of all spiked analytes were within the appropriate control limits.

9. Duplicates: Acceptable.

Relative Percent Differences (RPDs) of all spiked analytes were within the required control limits.

10. Compound Identification: Satisfactory.

All results were dual-column confirmed with differences between the columns less than 25% except Aroclor 1260 in samples 07040110, 07040129, 07040140, and 07040131. Positive sample results with percent differences between the columns greater than 25% were qualified as estimated quantities (J).

11. Target Compound Quantitation and Quantitation Limits: Acceptable.

Sample results and quantitation limits were correctly calculated.

12. Laboratory Contact

No laboratory contact was required.

13. Overall Assessment

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
- U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
- UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met.

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040102

Lab Sample ID: 580-5689-1

Client Matrix: Solid

% Moisture: 10.5

Date Sampled: 04/16/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7518.D

Dilution: 1.0

Initial Weight/Volume: 10.1021 g

Date Analyzed: 04/26/2007 0125

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0064	0.011
PCB-1221		ND		0.0064	0.011
PCB-1232		ND		0.0064	0.011
PCB-1242		ND		0.0064	0.011
PCB-1248		ND		0.0064	0.011
PCB-1254		ND		0.0017	0.011
PCB-1260		0.0098	J	0.0017	0.011
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		79		45 - 155	
DCB Decachlorobiphenyl		71		50 - 150	

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Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040104

Lab Sample ID: 580-5689-2

Date Sampled: 04/17/2007 0000

Client Matrix: Solid

% Moisture: 16.4

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7519.D

Dilution: 1.0

Initial Weight/Volume: 10.2524 g

Date Analyzed: 04/26/2007 0149

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0068	0.012
PCB-1221		ND		0.0068	0.012
PCB-1232		ND		0.0068	0.012
PCB-1242		ND		0.0068	0.012
PCB-1248		ND		0.0068	0.012
PCB-1254		ND		0.0017	0.012
PCB-1260		ND		0.0017	0.012
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		83		45 - 155	
DCB Decachlorobiphenyl		82		50 - 150	

MM
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040106

Lab Sample ID: 580-5689-4

Client Matrix: Solid

% Moisture: 27.3

Date Sampled: 04/17/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7520.D

Dilution: 1.0

Initial Weight/Volume: 10.3437 g

Date Analyzed: 04/26/2007 0213

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0077	0.013
PCB-1221		ND		0.0077	0.013
PCB-1232		ND		0.0077	0.013
PCB-1242		ND		0.0077	0.013
PCB-1248		ND		0.0077	0.013
PCB-1254		ND		0.0020	0.013
PCB-1260		0.13		0.0020	0.013
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		94		45 - 155	
DCB Decachlorobiphenyl		80		50 - 150	

MN
574-0

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040108

Lab Sample ID: 580-5689-5

Date Sampled: 04/17/2007 0000

Client Matrix: Solid

% Moisture: 10.3

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7521.D

Dilution: 1.0

Initial Weight/Volume: 10.7649 g

Date Analyzed: 04/26/2007 0236

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0060	0.010
PCB-1221		ND		0.0060	0.010
PCB-1232		ND		0.0060	0.010
PCB-1242		ND		0.0060	0.010
PCB-1248		ND		0.0060	0.010
PCB-1254		ND		0.0016	0.010
PCB-1260		0.019		0.0016	0.010
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		86		45 - 155	
DCB Decachlorobiphenyl		83		50 - 150	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040110

Lab Sample ID: 580-5689-6

Client Matrix: Solid

% Moisture: 22.7

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7524.D

Dilution: 1.0

Initial Weight/Volume: 10.1937 g

Date Analyzed: 04/26/2007 0347

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0074	0.013
PCB-1221		ND		0.0074	0.013
PCB-1232		ND		0.0074	0.013
PCB-1242		ND		0.0074	0.013
PCB-1248		ND		0.0074	0.013
PCB-1254		ND		0.0019	0.013
PCB-1260		0.020	J	0.0019	0.013
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		69		45 - 155	
DCB Decachlorobiphenyl		79		50 - 150	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040111

Lab Sample ID: 580-5689-7

Client Matrix: Water

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method:	8082	Analysis Batch:	580-18140	Instrument ID:	SEA034
Preparation:	3510C	Prep Batch:	580-18052	Lab File ID:	PCB7493.D
Dilution:	1.0			Initial Weight/Volume:	910 mL
Date Analyzed:	04/25/2007 1645			Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 0949			Injection Volume:	
				Column ID:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0088	0.055
PCB-1221	ND		0.0088	0.055
PCB-1232	ND		0.0088	0.055
PCB-1242	ND		0.0088	0.055
PCB-1248	ND		0.0088	0.055
PCB-1254	ND		0.0055	0.055
PCB-1260	ND		0.0055	0.055
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	57	X	60 - 150	
DCB Decachlorobiphenyl	65		40 - 135	

MM
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040114

Lab Sample ID: 580-5689-9

Client Matrix: Solid

% Moisture: 27.0

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7527.D

Dilution: 1.0

Initial Weight/Volume: 10.1749 g

Date Analyzed: 04/26/2007 0458

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0078	0.013
PCB-1221		ND		0.0078	0.013
PCB-1232		ND		0.0078	0.013
PCB-1242		ND		0.0078	0.013
PCB-1248		ND		0.0078	0.013
PCB-1254		ND		0.0020	0.013
PCB-1260		0.0092	J	0.0020	0.013
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		73		45 - 155	
DCB Decachlorobiphenyl		79		50 - 150	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040116

Lab Sample ID: 580-5689-10

Client Matrix: Solid

% Moisture: 12.0

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7528.D

Dilution: 1.0

Initial Weight/Volume: 10.3936 g

Date Analyzed: 04/26/2007 0522

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0063	0.011
PCB-1221		ND		0.0063	0.011
PCB-1232		ND		0.0063	0.011
PCB-1242		ND		0.0063	0.011
PCB-1248		ND		0.0063	0.011
PCB-1254		ND		0.0016	0.011
PCB-1260		ND		0.0016	0.011
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		81		45 - 155	
DCB Decachlorobiphenyl		68		50 - 150	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040117

Lab Sample ID: 580-5689-11

Client Matrix: Solid

% Moisture: 13.6

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7529.D

Dilution: 1.0

Initial Weight/Volume: 10.3414 g

Date Analyzed: 04/26/2007 0546

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0065	0.011
PCB-1221		ND		0.0065	0.011
PCB-1232		ND		0.0065	0.011
PCB-1242		ND		0.0065	0.011
PCB-1248		ND		0.0065	0.011
PCB-1254		ND		0.0017	0.011
PCB-1260		0.0044	J	0.0017	0.011
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		88		45 - 155	
DCB Decachlorobiphenyl		75		50 - 150	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040119

Lab Sample ID: 580-5689-12

Client Matrix: Solid

% Moisture: 23.8

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7558.D

Dilution: 1.0

Initial Weight/Volume: 10.3970 g

Date Analyzed: 04/26/2007 1712

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0073	0.013
PCB-1221		ND		0.0073	0.013
PCB-1232		ND		0.0073	0.013
PCB-1242		ND		0.0073	0.013
PCB-1248		ND		0.0073	0.013
PCB-1254		ND		0.0019	0.013
PCB-1260		ND		0.0019	0.013
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		74		45 - 155	
DCB Decachlorobiphenyl		92		50 - 150	

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5-21-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040120

Lab Sample ID: 580-5689-13

Client Matrix: Solid

% Moisture: 9.9

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7531.D

Dilution: 1.0

Initial Weight/Volume: 10.7270 g

Date Analyzed: 04/26/2007 0633

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0060	0.010
PCB-1221		ND		0.0060	0.010
PCB-1232		ND		0.0060	0.010
PCB-1242		ND		0.0060	0.010
PCB-1248		ND		0.0060	0.010
PCB-1254		ND		0.0016	0.010
PCB-1260		0.022		0.0016	0.010
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		70		45 - 155	
DCB Decachlorobiphenyl		91		50 - 150	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040122

Lab Sample ID: 580-5689-14

Client Matrix: Solid

% Moisture: 22.3

Date Sampled: 04/18/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7532.D

Dilution: 1.0

Initial Weight/Volume: 10.2389 g

Date Analyzed: 04/26/2007 0657

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0073	0.013
PCB-1221		ND		0.0073	0.013
PCB-1232		ND		0.0073	0.013
PCB-1242		ND		0.0073	0.013
PCB-1248		ND		0.0073	0.013
PCB-1254		ND		0.0019	0.013
PCB-1260		ND		0.0019	0.013
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		67		45 - 155	
DCB Decachlorobiphenyl		85		50 - 150	

MW
52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040124

Lab Sample ID: 580-5689-15

Client Matrix: Solid

% Moisture: 11.2

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7559.D

Dilution: 1.0

Initial Weight/Volume: 10.6542 g

Date Analyzed: 04/26/2007 1736

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0061	0.011
PCB-1221		ND		0.0061	0.011
PCB-1232		ND		0.0061	0.011
PCB-1242		ND		0.0061	0.011
PCB-1248		ND		0.0061	0.011
PCB-1254		ND		0.0016	0.011
PCB-1260		ND		0.0016	0.011
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		69		45 - 155	
DCB Decachlorobiphenyl		92		50 - 150	

MM
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040125

Lab Sample ID: 580-5689-16

Date Sampled: 04/19/2007 0000

Client Matrix: Solid

% Moisture: 8.5

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7534.D

Dilution: 1.0

Initial Weight/Volume: 10.5916 g

Date Analyzed: 04/26/2007 0744

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0060	0.010
PCB-1221		ND		0.0060	0.010
PCB-1232		ND		0.0060	0.010
PCB-1242		ND		0.0060	0.010
PCB-1248		ND		0.0060	0.010
PCB-1254		ND		0.0015	0.010
PCB-1260		ND		0.0015	0.010
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		93		45 - 155	
DCB Decachlorobiphenyl		80		50 - 150	

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040127

Lab Sample ID: 580-5689-17

Client Matrix: Solid

% Moisture: 21.1

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7535.D

Dilution: 1.0

Initial Weight/Volume: 10.5911 g

Date Analyzed: 04/26/2007 0808

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0069	0.012
PCB-1221		ND		0.0069	0.012
PCB-1232		ND		0.0069	0.012
PCB-1242		ND		0.0069	0.012
PCB-1248		ND		0.0069	0.012
PCB-1254		ND		0.0018	0.012
PCB-1260		0.0068	J	0.0018	0.012
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		67		45 - 155	
DCB Decachlorobiphenyl		88		50 - 150	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040129

Lab Sample ID: 580-5689-18

Client Matrix: Solid

% Moisture: 12.3

Date Sampled: 04/19/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18145

Instrument ID: SEA034

Preparation: 3550B

Prep Batch: 580-17977

Lab File ID: PCB7536.D

Dilution: 1.0

Initial Weight/Volume: 10.7332 g

Date Analyzed: 04/26/2007 0832

Final Weight/Volume: 10 mL

Date Prepared: 04/24/2007 0646

Injection Volume:

Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.0062	0.011
PCB-1221		ND		0.0062	0.011
PCB-1232		ND		0.0062	0.011
PCB-1242		ND		0.0062	0.011
PCB-1248		ND		0.0062	0.011
PCB-1254		ND		0.0016	0.011
PCB-1260		0.0065	J	0.0016	0.011
Surrogate		%Rec		Acceptance Limits	
Tetrachloro-m-xylene		75		45 - 155	
DCB Decachlorobiphenyl		90		50 - 150	

MW
524.07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040132

Lab Sample ID: 580-5689-20

Client Matrix: Water

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 04/25/2007 1708
Date Prepared: 04/25/2007 0949

Analysis Batch: 580-18140
Prep Batch: 580-18052

Instrument ID: SEA034
Lab File ID: PCB7494.D
Initial Weight/Volume: 1035 mL
Final Weight/Volume: 1 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0077	0.048
PCB-1221	ND		0.0077	0.048
PCB-1232	ND		0.0077	0.048
PCB-1242	ND		0.0077	0.048
PCB-1248	ND		0.0077	0.048
PCB-1254	ND		0.0048	0.048
PCB-1260	ND		0.0048	0.048
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	78		60 - 150	
DCB Decachlorobiphenyl	82		40 - 135	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040133

Lab Sample ID: 580-5689-21

Client Matrix: Water

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18140

Instrument ID: SEA034

Preparation: 3510C

Prep Batch: 580-18052

Lab File ID: PCB7495.D

Dilution: 1.0

Initial Weight/Volume: 1045 mL

Date Analyzed: 04/25/2007 1732

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 0949

Injection Volume:

Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0077	0.048
PCB-1221	ND		0.0077	0.048
PCB-1232	ND		0.0077	0.048
PCB-1242	ND		0.0077	0.048
PCB-1248	ND		0.0077	0.048
PCB-1254	ND		0.0048	0.048
PCB-1260	ND		0.0048	0.048
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	65		60 - 150	
DCB Decachlorobiphenyl	78		40 - 135	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040134

Lab Sample ID: 580-5689-22

Date Sampled: 04/20/2007 0000

Client Matrix: Water

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082	Analysis Batch: 580-18140	Instrument ID: SEA034
Preparation: 3510C	Prep Batch: 580-18052	Lab File ID: PCB7496.D
Dilution: 1.0		Initial Weight/Volume: 895 mL
Date Analyzed: 04/25/2007 1756		Final Weight/Volume: 1 mL
Date Prepared: 04/25/2007 0949		Injection Volume:
		Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0089	0.056
PCB-1221	ND		0.0089	0.056
PCB-1232	ND		0.0089	0.056
PCB-1242	ND		0.0089	0.056
PCB-1248	ND		0.0089	0.056
PCB-1254	ND		0.0056	0.056
PCB-1260	ND		0.0056	0.056
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	64		60 - 150	
DCB Decachlorobiphenyl	76		40 - 135	

9MN
52407

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040135

Lab Sample ID: 580-5689-23

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 04/25/2007 1819
Date Prepared: 04/25/2007 0949

Analysis Batch: 580-18140
Prep Batch: 580-18052

Instrument ID: SEA034
Lab File ID: PCB7497.D
Initial Weight/Volume: 860 mL
Final Weight/Volume: 1 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0093	0.058
PCB-1221	ND		0.0093	0.058
PCB-1232	ND		0.0093	0.058
PCB-1242	ND		0.0093	0.058
PCB-1248	ND		0.0093	0.058
PCB-1254	ND		0.0058	0.058
PCB-1260	ND		0.0058	0.058
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	76		60 - 150	
DCB Decachlorobiphenyl	83		40 - 135	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040136

Lab Sample ID: 580-5689-24

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18140

Instrument ID: SEA034

Preparation: 3510C

Prep Batch: 580-18052

Lab File ID: PCB7502.D

Dilution: 1.0

Initial Weight/Volume: 980 mL

Date Analyzed: 04/25/2007 2018

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 0949

Injection Volume:

Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0082	0.051
PCB-1221	ND		0.0082	0.051
PCB-1232	ND		0.0082	0.051
PCB-1242	ND		0.0082	0.051
PCB-1248	ND		0.0082	0.051
PCB-1254	ND		0.0051	0.051
PCB-1260	ND		0.0051	0.051
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	52	XI	60 - 150	
DCB Decachlorobiphenyl	48		40 - 135	

MW
524-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040137

Lab Sample ID: 580-5689-25

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18140

Instrument ID: SEA034

Preparation: 3510C

Prep Batch: 580-18052

Lab File ID: PCB7503.D

Dilution: 1.0

Initial Weight/Volume: 980 mL

Date Analyzed: 04/25/2007 2041

Final Weight/Volume: .1 mL

Date Prepared: 04/25/2007 0949

Injection Volume:

Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0082	0.051
PCB-1221	ND		0.0082	0.051
PCB-1232	ND		0.0082	0.051
PCB-1242	ND		0.0082	0.051
PCB-1248	ND		0.0082	0.051
PCB-1254	ND		0.0051	0.051
PCB-1260	ND		0.0051	0.051
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	62		60 - 150	
DCB Decachlorobiphenyl	59		40 - 135	

MM
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040138

Lab Sample ID: 580-5689-26

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 04/25/2007 2105
Date Prepared: 04/25/2007 0949

Analysis Batch: 580-18140
Prep Batch: 580-18052

Instrument ID: SEA034
Lab File ID: PCB7504.D
Initial Weight/Volume: 1005 mL
Final Weight/Volume: 1 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0080	0.050
PCB-1221	ND		0.0080	0.050
PCB-1232	ND		0.0080	0.050
PCB-1242	ND		0.0080	0.050
PCB-1248	ND		0.0080	0.050
PCB-1254	ND		0.0050	0.050
PCB-1260	ND		0.0050	0.050
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	47	X I	60 - 150	
DCB Decachlorobiphenyl	47		40 - 135	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040139

Lab Sample ID: 580-5689-27

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18140

Instrument ID: SEA034

Preparation: 3510C

Prep Batch: 580-18052

Lab File ID: PCB7505.D

Dilution: 1.0

Initial Weight/Volume: 975 mL

Date Analyzed: 04/25/2007 2129

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 0949

Injection Volume:

Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0082	0.051
PCB-1221	ND		0.0082	0.051
PCB-1232	ND		0.0082	0.051
PCB-1242	ND		0.0082	0.051
PCB-1248	ND		0.0082	0.051
PCB-1254	ND		0.0051	0.051
PCB-1260	ND		0.0051	0.051
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	57	XI	60 - 150	
DCB Decachlorobiphenyl	49		40 - 135	

MW
524.07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040140

Lab Sample ID: 580-5689-28

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method:	8082	Analysis Batch:	580-18140	Instrument ID:	SEA034
Preparation:	3510C	Prep Batch:	580-18052	Lab File ID:	PCB7557.D
Dilution:	1.0			Initial Weight/Volume:	935 mL
Date Analyzed:	04/26/2007 1649			Final Weight/Volume:	1 mL
Date Prepared:	04/25/2007 0949			Injection Volume:	
				Column ID:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0086	0.053
PCB-1221	ND		0.0086	0.053
PCB-1232	ND		0.0086	0.053
PCB-1242	ND		0.0086	0.053
PCB-1248	ND		0.0086	0.053
PCB-1254	ND		0.0053	0.053
PCB-1260	0.028	J	0.0053	0.053
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	84		60 - 150	
DCB Decachlorobiphenyl	52		40 - 135	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040141

Lab Sample ID: 580-5689-29

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082

Analysis Batch: 580-18140

Instrument ID: SEA034

Preparation: 3510C

Prep Batch: 580-18052

Lab File ID: PCB7507.D

Dilution: 1.0

Initial Weight/Volume: 980 mL

Date Analyzed: 04/25/2007 2216

Final Weight/Volume: 1 mL

Date Prepared: 04/25/2007 0949

Injection Volume:

Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0082	0.051
PCB-1221	ND		0.0082	0.051
PCB-1232	ND		0.0082	0.051
PCB-1242	ND		0.0082	0.051
PCB-1248	ND		0.0082	0.051
PCB-1254	ND		0.0051	0.051
PCB-1260	ND		0.0051	0.051
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	47	XI	60 - 150	
DCB Decachlorobiphenyl	41		40 - 135	

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Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040142

Lab Sample ID: 580-5689-30

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method: 8082	Analysis Batch: 580-18140	Instrument ID: SEA034
Preparation: 3510C	Prep Batch: 580-18052	Lab File ID: PCB7508.D
Dilution: 1.0		Initial Weight/Volume: 1010 mL
Date Analyzed: 04/25/2007 2240		Final Weight/Volume: 1 mL
Date Prepared: 04/25/2007 0949		Injection Volume:
		Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0079	0.050
PCB-1221	ND		0.0079	0.050
PCB-1232	ND		0.0079	0.050
PCB-1242	ND		0.0079	0.050
PCB-1248	ND		0.0079	0.050
PCB-1254	ND		0.0050	0.050
PCB-1260	ND		0.0050	0.050
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	63		60 - 150	
DCB Decachlorobiphenyl	56		40 - 135	

MM
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040143

Lab Sample ID: 580-5689-31

Client Matrix: Water

Date Sampled: 04/21/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method:	8082	Analysis Batch: 580-18140	Instrument ID:	SEA034
Preparation:	3510C	Prep Batch: 580-18052	Lab File ID:	PCB7509.D
Dilution:	1.0		Initial Weight/Volume:	990 mL
Date Analyzed:	04/25/2007 2303		Final Weight/Volume:	.1 mL
Date Prepared:	04/25/2007 0949		Injection Volume:	
			Column ID:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.0081	0.051
PCB-1221	ND		0.0081	0.051
PCB-1232	ND		0.0081	0.051
PCB-1242	ND		0.0081	0.051
PCB-1248	ND		0.0081	0.051
PCB-1254	ND		0.0051	0.051
PCB-1260	ND		0.0051	0.051
Surrogate	%Rec		Acceptance Limits	
Tetrachloro-m-xylene	61		60 - 150	
DCB Decachlorobiphenyl	54		40 - 135	

MW
5-24-07

Analytical Data

Client: Ecology and Environment, Inc.

Job Number: 580-5689-1

Client Sample ID: 07040131

Lab Sample ID: 580-5689-32

Client Matrix: Waste

Date Sampled: 04/20/2007 0000

Date Received: 04/23/2007 1235

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Method:	8082	Analysis Batch:	580-18153	Instrument ID:	SEA034
Preparation:	3580A	Prep Batch:	580-18059	Lab File ID:	PCB7555.D
Dilution:	1.0			Initial Weight/Volume:	0.2115 g
Date Analyzed:	04/26/2007 1602			Final Weight/Volume:	10 mL
Date Prepared:	04/25/2007 1130			Injection Volume:	
				Column ID:	PRIMARY

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.27	0.47
PCB-1221		ND		0.27	0.47
PCB-1232		ND		0.27	0.47
PCB-1242		ND		0.27	0.47
PCB-1248		ND		0.27	0.47
PCB-1254		ND		0.071	0.47
PCB-1260		0.33	J	0.071	0.47
Surrogate		%Rec			Acceptance Limits
Tetrachloro-m-xylene		70			45 - 155
DCB Decachlorobiphenyl		88			50 - 150

MN
52407



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720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: May 26, 2007

TO: Steve Hall, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: Organic Data Quality Assurance Review, Avery Landing Site,
Avery, Idaho

REF: TDD: 07-03-0004 PAN: 002233.0193.01SF

The data quality assurance review of 4 water samples collected from the Avery Landing site located in Avery, Idaho, has been completed. Analysis for Extended Diesel Range Total Petroleum Hydrocarbons (Ecology Method NWTPH-Dx) was performed by Laucks Testing Services, Seattle, Washington.

The samples were numbered:

07040132 07040133 07040134 07040143

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were collected on April 20, 2007, extracted on April 24, 2007, and analyzed on May 8, 2007, therefore meeting QC criteria of less than 7 days between collection and extraction for water samples and less than 40 days between extraction and analysis.

2. Initial Calibration: Acceptable.

Calculations were verified as correct. All relative percent differences (RPDs) were less than or equal to the laboratory control limits.

3. Continuing Calibration: Acceptable.

Calculations were verified as correct. All percent differences (%Ds) were \leq the laboratory control limits of 15%.

4. Error Determination: Not Performed.

Samples necessary for bias and precision determination were not provided to the laboratory. All

samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. Blanks: Acceptable.

A method blank was analyzed for each extraction batch for each matrix and analysis system. Diesel- and motor oil-range TPHs were not detected in any blank.

6. System Monitoring Compounds (SMC): Acceptable.

All recoveries of the SMCs were greater than 10% and within QC criteria.

7. Performance Evaluation Samples: Not Provided.

Performance evaluation samples were not provided to the laboratory.

8. Blank Spikes: Acceptable.

Blank spike results were within QC limits.

9. Quantitation and Quantitation Limits: Acceptable.

Sample concentrations were correctly calculated.

10. Laboratory Contact: Not Required.

No laboratory contact was required.

11. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan, the OSWER Directive "Quality Assurance/Quality Control Guidance for Removal Activities, Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
- U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040132

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA01

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA01-001

Sample wt/vol: 1040.0 (g/mL) mL

Lab File ID: C507749.d

% Moisture: Decanted: (Y/N) N

Date Collected: 04/20/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/08/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/L</u>	Q
TPH-Diesel	Diesel Range Organics	0.048	U
TPH-Oil	Oil Range Organics	0.19	U

Comments:

MW
5-26-07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040133

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA01

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA01-002

Sample wt/vol: 1040.0 (g/mL) mL

Lab File ID: C507751.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/20/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/08/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/L	Q
TPH-Diesel	Diesel Range Organics	0.32	
TPH-Oil	Oil Range Organics	0.19	U

Comments: The hydrocarbon pattern partially resembles a diesel.

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040134

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA01

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA01-003

Sample wt/vol: 1050.0 (g/mL) mL

Lab File ID: C507752.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/20/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/08/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/L</u>	Q
TPH-Diesel	Diesel Range Organics	2.3	
TPH-Oil	Oil Range Organics	1.2	

Comments: The hydrocarbon pattern partially resembles a diesel and partially resembles an oil.

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040143

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA01

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA01-004

Sample wt/vol: 1030.0 (g/mL) mL

Lab File ID: C507750.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/20/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/08/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/L</u>	<u>Q</u>
TPH-Diesel	Diesel Range Organics	0.079	
TPH-Oil	Oil Range Organics	0.19	<u>U</u>

Comments: The hydrocarbon pattern does not resemble diesel.



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MEMORANDUM

DATE: May 28, 2007

TO: Steve Hall, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Organic Data Quality Assurance Review, Avery Landing Site,
Avery, Idaho**

REF: TDD: 07-03-0004

PAN: 002233.0193.01SF

The data quality assurance review of 1 waste, 13 soil, and 9 water samples collected from the Avery Landing site located in Avery, Idaho, has been completed. Analysis for Extended Diesel Range Total Petroleum Hydrocarbons (Ecology Method NWTPH-Dx) was performed by Laucks Testing Services, Seattle, Washington. The samples were numbered:

Water	07040111	07040136	07040137	07040138	07040139
	07040140	07040135	07040141	07040142	
Soil	07040102	07040105	07040106	07040108	07040110
	07040114	07040116	07040119	07040120	07040122
	07040124	07040127	07040129		
Waste	07040131				

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained at 4°C ($\pm 2^\circ\text{C}$) except one cooler which was received at 7.2 °C; no action was taken based on this slight outlier. The samples were collected between April 16 and 20, 2007, extracted on April 24, 25, or May 16 (waste), 2007, and analyzed by May 17, 2007, therefore meeting QC criteria of less than 7 days between collection and extraction for water samples (14 days for soil samples) and less than 40 days between extraction and analysis. There are no holding times for waste samples.

2. Initial Calibration: Acceptable.

Calculations were verified as correct. All correlation coefficients were > 0.995 .

3. Continuing Calibration: Acceptable.

Calculations were verified as correct. All percent differences (%Ds) were \leq the laboratory control limits of 15%.

4. Error Determination: Not Performed.

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. Blanks: Acceptable.

A method blank was analyzed for each extraction batch for each matrix and analysis system. Diesel- and motor oil-range TPHs were not detected in any blank.

6. System Monitoring Compounds (SMC): Satisfactory.

All recoveries of the SMCs were greater than 10% and within QC criteria except in diluted analyses of samples 07040140 (both SMCs with 0% recovery), 07040122 (terphenyl-d14 had a low recovery), and 07040119 (2-fluorobiphenyl had a low recovery). No action was taken based on these outliers due to dilutions.

7. Performance Evaluation Samples: Not Provided.

Performance evaluation samples were not provided to the laboratory.

8. Blank and Matrix Spikes and Duplicates: Acceptable.

Blank and matrix spike and duplicate results were within QC limits.

9. Quantitation and Quantitation Limits: Acceptable.

Sample concentrations were correctly calculated.

10. Laboratory Contact: Not Required.

No laboratory contact was required.

11. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan, the OSWER Directive "Quality Assurance/Quality Control Guidance for Removal Activities, Data Validation Procedures" (EPA/540/G-90/004) and the analytical method. Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040111

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-001

Sample wt/vol: 1050.0 (g/mL) mL

Lab File ID: C507716.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/18/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/07/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/L</u>	Q
TPH-Diesel	Diesel Range Organics	0.048	U
TPH-Oil	Oil Range Organics	0.19	U

Comments:

MW
5-28-07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040136

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-002

Sample wt/vol: 1060.0 (g/mL) mL

Lab File ID: C507777.d

% Moisture: Decanted: (Y/N) N

Date Collected: 04/21/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/09/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/L</u>	<u>Q</u>
TPH-Diesel	Diesel Range Organics	5.5	
TPH-Oil	Oil Range Organics	3.8	

Comments: The hydrocarbon pattern partially resembles a diesel and partially resembles an oil.

MW
5/8/07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040137

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-003

Sample wt/vol: 990.0 (g/mL) mL

Lab File ID: C507773.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/21/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/09/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ≤2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/L	Q
TPH-Diesel	Diesel Range Organics	0.78	
TPH-Oil	Oil Range Organics	1.0	

Comments: The hydrocarbon pattern partially resembles a diesel and partially resembles an oil.

MW
52807

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040138

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-004

Sample wt/vol: 940.0 (g/mL) mL

Lab File ID: C507775.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/21/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/09/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/L	Q
TPH-Diesel	Diesel Range Organics	3.9	
TPH-Oil	Oil Range Organics	4.1	

Comments: The hydrocarbon pattern partially resembles a diesel and partially resembles an oil.

MW
5/28/07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040139

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-005

Sample wt/vol: 950.0 (g/mL) mL

Lab File ID: C507774.d

% Moisture: Decanted: (Y/N) N

Date Collected: 04/21/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/09/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/L</u>	Q
TPH-Diesel	Diesel Range Organics	2.0	
TPH-Oil	Oil Range Organics	0.78	

Comments: The hydrocarbon pattern partially resembles a diesel and partially resembles an oil.

MW
5/28/07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040140

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-006

Sample wt/vol: 950.0 (g/mL) mL

Lab File ID: C507755.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/21/2007

Extraction: (Type) SEPP

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/09/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 100.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/L	Q
TPH-Diesel	Diesel Range Organics	110	
TPH-Oil	Oil Range Organics	45	

Comments: The hydrocarbon pattern partially resembles a diesel and partially resembles an oil. The surrogates have been diluted out.

MW
5-28-07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040135

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-007

Sample wt/vol: 970.0 (g/mL) mL

Lab File ID: C507712.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/21/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/07/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/L</u>	Q
TPH-Diesel	Diesel Range Organics	0.083	
TPH-Oil	Oil Range Organics	0.21	U

Comments: The hydrocarbon pattern does not resemble diesel.

MW
5/28/07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

G7040141

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-008

Sample wt/vol: 1020.0 (g/mL) mL

Lab File ID: C507772.d

% Moisture: _____ Decanted: (Y/N) N

Date Collected: 04/21/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/09/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/L	Q
TPH-Diesel	Diesel Range Organics	1.3	
TPH-Oil	Oil Range Organics	0.72	

Comments: The hydrocarbon pattern partially resembles a diesel and partially resembles an oil.

Handwritten signature and date 5/28/07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040142

Lab Name: Laucke Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017496

Matrix: (SOIL/WATER) Water

Lab Sample ID: IDA02-009

Sample wt/vol: 1000.0 (g/mL) mL

Lab File ID: C507715.d

% Moisture: Decanted: (Y/N) N

Date Collected: 04/21/2007

Extraction: (Type) SEPF

Date Extracted: 04/24/2007

Concentrated Extract Volume: 1000.0 (uL)

Date Analyzed: 05/07/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: <2

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/L</u>	Q
TPH-Diesel	Diesel Range Organics	0.050	U
TPH-Oil	Oil Range Organics	0.26	

Comments: The hydrocarbon pattern does not resemble an oil.

MW
5-28-07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040102

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-022

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502710.d

% Moisture: 12.0 Decanted: (Y/N) N

Date Collected: 04/16/2007

Extraction: (Type) PPEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/02/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS; (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	1500	
TPH-Oil	Oil Range Organics	12000	

Comments: The hydrocarbon pattern resembles an oil and does not resemble diesel.

MW
52801

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040105

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-023

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502711.d

% Moisture: 29.0 Decanted: (Y/N) N

Date Collected: 04/17/2007

Extraction: (Type) PFEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/02/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	7200	
TPH-Oil	Oil Range Organics	5200	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

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1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040106

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-024

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C507754.d

% Moisture: 29.0 Decanted: (Y/N) N

Date Collected: 04/17/2007

Extraction: (Type) PPEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/09/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	40	
TPH-Oil	Oil Range Organics	140	U

Comments: The hydrocarbon pattern does not resemble diesel.

MW
5-28-07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040108

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-025

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502712.d

% Moisture: 12.0 Decanted: (Y/N) N

Date Collected: 04/17/2007

Extraction: (Type) PFEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/02/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	160	
TPH-Oil	Oil Range Organics	890	

Comments: The hydrocarbon pattern resembles an oil and does not resemble diesel.

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52807

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040110

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-026

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502773.d

% Moisture: 22.0 Decanted: (Y/N) N

Date Collected: 04/18/2007

Extraction: (Type) PFEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/04/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/Kg</u>	Q
TPH-Diesel	Diesel Range Organics	12000	
TPH-Oil	Oil Range Organics	2000	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

MW
52807

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040114

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-028

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502775.d

% Moisture: 26.0 Decanted: (Y/N) N

Date Collected: 04/18/2007

Extraction: (Type) PFX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/04/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	6900	
TPH-Oil	Oil Range Organics	3600	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

MW
5807

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040116

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-029

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502721.d

% Moisture: 15.0 Decanted: (Y/N) N

Date Collected: 04/18/2007

Extraction: (Type) PFEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/02/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/Kg</u>	Q
TPH-Diesel	Diesel Range Organics	650	
TPH-Oil	Oil Range Organics	2500	

Comments: The hydrocarbon pattern resembles an oil and does not resemble diesel.

MW
5/8/07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040119

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-031

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502722.d

% Moisture: 23.0 Decanted: (Y/N) N

Date Collected: 04/18/2007

Extraction: (Type) PFEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/02/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) <u>mg/Kg</u>	Q
TPH-Diesel	Diesel Range Organics	17000	
TPH-Oil	Oil Range Organics	6700	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

MW
SABOT

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040120

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-032

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: CS02723.d

% Moisture: 11.0 Decanted: (Y/N) N

Date Collected: 04/18/2007

Extraction: (Type) PPEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/02/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	3700	
TPH-Oil	Oil Range Organics	3300	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

mw
528-07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040122

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-033

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502724.d

% Moisture: 22.0 Decanted: (Y/N) N

Date Collected: 04/18/2007

Extraction: (Type) PFEK

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/03/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS; (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	13000	
TPH-Oil	Oil Range Organics	7000	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

MW
5-28-07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040124

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-034

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502725.d

% Moisture: 13.0 Decanted: (Y/N) N

Date Collected: 04/19/2007

Extraction: (Type) PPEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/03/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	3100	
TPH-Oil	Oil Range Organics	1500	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

Handwritten: NW 52805

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040127

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-035

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502731.d

% Moisture: 21.0 Decanted: (Y/N) N

Date Collected: 04/19/2007

Extraction: (Type) PFEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/03/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	7800	
TPH-Oil	Oil Range Organics	3100	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

MW
52801

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040129

Lab Name: Laucks Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017502

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-036

Sample wt/vol: 10.0 (g/mL) gm

Lab File ID: C502733.d

% Moisture: 10.0 Decanted: (Y/N) N

Date Collected: 04/19/2007

Extraction: (Type) PFEX

Date Extracted: 04/25/2007

Concentrated Extract Volume: 5000.0 (uL)

Date Analyzed: 05/03/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	6600	
TPH-Oil	Oil Range Organics	1900	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

MW
5/8/07

1
DIESEL ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

07040131

Lab Name: Laucke Testing Laboratories,

Contract: N/A

SDG No.: IDA02

Run Sequence: R017667

Matrix: (SOIL/WATER) Soil

Lab Sample ID: IDA02-037

Sample wt/vol: 0.13 (g/mL) gm

Lab File ID: C516729.d

% Moisture: 0.0 Decanted: (Y/N) N

Date Collected: 04/20/2007

Extraction: (Type) WASTE

Date Extracted: 05/16/2007

Concentrated Extract Volume: 10000.0(uL)

Date Analyzed: 05/17/2007

Injection Volume: 2.0 (uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: _____

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) mg/Kg	Q
TPH-Diesel	Diesel Range Organics	1100000	
TPH-Oil	Oil Range Organics	250000	

Comments: The hydrocarbon pattern partially resembles diesel and partially resembles an oil.

MW
5/8/07



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720 Third Avenue, Suite 1700, Seattle, WA 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: May 26, 2007

TO: Steve Hall, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Inorganic Data Quality Assurance Review, Avery Landing Site, Avery, Idaho**

REF: TDD: 07-03-0004 PAN: 002233.0193.01SF

The data quality assurance review of 4 water samples collected from the Avery Landing site in Avery, Idaho, has been completed. Target Analyte List (TAL) metals analyses (EPA Methods 6010, 6020, and 7471) were performed by Laucks Testing Services, Seattle, Washington.

The samples were numbered:

07040132 07040133 07040134 07040143

Data Qualifications:

1. Sample Holding Times: Acceptable.

All liquid samples were preserved to a pH < 2. The samples were maintained at 4°C (\pm 2°C). The samples were collected on April 20, 2007, and were analyzed by April 26, 2007, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury).

2. Initial and Continuing Calibration: Satisfactory.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% except beryllium and cadmium high recoveries associated with all samples. All beryllium and cadmium positive results were qualified as estimated quantities (J). All AA recoveries were within QC limits of 80% to 120%.

3. Blanks: Satisfactory.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. The following elements were detected in the applicable calibration and/or preparation blanks and resulted in sample qualifications:

Blank	Element	Concentration (ug/L)
Initial Calibration Blank (ICB)	Antimony	0.427
Continuing Calibration Blank (CCB) 9	Antimony	0.0689
	Lead	-0.101
	Selenium	-0.111
Continuing Calibration Blank (CCB) 10	Antimony	0.149
	Lead	-0.118
	Thallium	0.0969
Continuing Calibration Blank (CCB) 11	Antimony	0.136
	Lead	-0.131
	Thallium	0.102

Associated sample results were qualified as not detected (U) if the sample result was less than five times the positive blank concentration. Associated sample results were qualified as estimated quantities (J or UJ) if the sample result was less than five times the absolute value of the negative blank concentration.

4. ICP Interference Check Sample: Acceptable, Satisfactory, or Not Acceptable.

An Interference Check Sample (ICS) was analyzed at the beginning and end of each sequence or at least twice every 8 hours, whichever was more frequent. All ICS (solution AB) results were within QC limits of 80% - 120% recovery.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Acceptable, Satisfactory, or Not Acceptable.

A serial dilution analysis was performed per matrix per concentration or per sample delivery group, whichever was more frequent. All serial dilution results were within QC limits except copper, magnesium, iron, and zinc. Associated sample results were qualified as estimated quantities (J or UJ).

8. Matrix Spike Analysis: Acceptable.

A matrix spike analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. Spike and spike duplicate recoveries were within the QC limits.

9. Duplicate Analysis: Satisfactory.

A laboratory duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate results were within QC limits except barium. Associated sample results were qualified as estimated quantities (J or UJ).

10. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample detection limits but greater than the instrument detection limits or because quality control criteria limits were not met.
- U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
- UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met.

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040132

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA01Matrix (soil/water): WaterLab Sample ID: IDA01-001Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	32.0	U		M	R017218
7440-36-0	Antimony	0.203	X U		M	R017218
7440-38-2	Arsenic	0.209	J		M	R017218
7440-39-3	Barium	4.76	J	X M	M	R017218
7440-41-7	Beryllium	0.0430	U		M	R017218
7440-43-9	Cadmium	0.0940	U		M	R017218
7440-70-2	Calcium	8270			M	R017218
7440-47-3	Chromium	0.364	X U		M	R017218
7440-48-4	Cobalt	0.0290	J		M	R017218
7440-50-8	Copper	0.520	U J	X M	M	R017218
7439-89-6	Iron	53.2	J		M	R017218
7439-92-1	Lead	0.0750	U J		M	R017218
7439-95-4	Magnesium	1830	J	X M	M	R017218
7439-96-5	Manganese	1.07	J		M	R017218
7439-97-6	Mercury	0.018	U J		CV	R017123
7440-02-0	Nickel	0.364	X U		M	R017218
7440-09-7	Potassium	455			M	R017218
7782-49-2	Selenium	0.110	U J		M	R017218
7440-22-4	Silver	0.0850	U		M	R017218
7440-23-5	Sodium	1030			M	R017218
7440-28-0	Thallium	0.0440	U		M	R017218
7440-62-2	Vanadium	0.173	X U		M	R017218
7440-66-6	Zinc	9.55	U J	X M	M	R017218

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment: _____

MW
5-26-07

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040133

Lab Name: Laucke Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA01Matrix (soil/water): WaterLab Sample ID: IDA01-002Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	32.0	U		M	R017218
7440-36-0	Antimony	0.0903	<i>Am</i> U		M	R017218
7440-38-2	Arsenic	0.248	J		M	R017218
7440-39-3	Barium	5.11	<i>J</i> <i>Am</i>		M	R017218
7440-41-7	Beryllium	0.0430	U		M	R017218
7440-43-9	Cadmium	0.0940	U		M	R017218
7440-70-2	Calcium	8700			M	R017218
7440-47-3	Chromium	0.326	<i>Am</i> U		M	R017218
7440-48-4	Cobalt	0.0327	J		M	R017218
7440-50-8	Copper	0.520	U <i>J</i> <i>Am</i>		M	R017218
7439-89-6	Iron	53.6	<i>J</i>		M	R017218
7439-92-1	Lead	0.0750	U <i>J</i>		M	R017218
7439-95-4	Magnesium	1930	<i>J</i> <i>Am</i>		M	R017218
7439-96-5	Manganese	1.31	J		M	R017218
7439-97-6	Mercury	0.018	U <i>J</i>		CV	R017123
7440-02-0	Nickel	0.320	<i>Am</i> U		M	R017218
7440-09-7	Potassium	488			M	R017218
7782-49-2	Selenium	0.110	U <i>J</i>		M	R017218
7440-22-4	Silver	0.0850	U		M	R017218
7440-23-5	Sodium	1020			M	R017218
7440-28-0	Thallium	0.0440	U		M	R017218
7440-62-2	Vanadium	0.231	<i>Am</i> U		M	R017218
7440-66-6	Zinc	1.80	U <i>J</i> <i>Am</i>		M	R017218

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040134

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA01Matrix (soil/water): WaterLab Sample ID: IDA01-003Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ng/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-3	Aluminum	32.0	U		M	R017218
7440-36-0	Antimony	0.0560	U		M	R017218
7440-38-2	Arsenic	0.296	J		M	R017218
7440-39-3	Barium	4.71	J		M	R017218
7440-41-7	Beryllium	0.0430	U		M	R017218
7440-43-9	Cadmium	0.0940	U		M	R017218
7440-70-2	Calcium	7920			M	R017218
7440-47-3	Chromium	0.263	U		M	R017218
7440-48-4	Cobalt	0.0280	U		M	R017218
7440-50-8	Copper	0.520	UJ		M	R017218
7439-89-6	Iron	48.7	J		M	R017218
7439-92-1	Lead	0.0750	UJ		M	R017218
7439-95-4	Magnesium	1770	J		M	R017218
7439-96-5	Manganese	1.37	J		M	R017218
7439-97-6	Mercury	0.018	UJ		CV	R017123
7440-02-0	Nickel	0.282	U		M	R017218
7440-09-7	Potassium	431			M	R017218
7782-49-2	Selenium	0.110	UJ		M	R017218
7440-22-4	Silver	0.0850	U		M	R017218
7440-23-5	Sodium	971			M	R017218
7440-28-0	Thallium	0.0440	U		M	R017218
7440-62-2	Vanadium	0.342	U		M	R017218
7440-66-6	Zinc	2.48	U		M	R017218

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment _____

MW
5-28-07 MET-6

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040143

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA01Matrix (soil/water): WaterLab Sample ID: IDA01-004Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units: ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	32.0	U		M	R017218
7440-36-0	Antimony	0.0574	U	U	M	R017218
7440-38-2	Arsenic	1.06			M	R017218
7440-39-3	Barium	21.1	J	U	M	R017218
7440-41-7	Beryllium	0.0430	U		M	R017218
7440-43-9	Cadmium	0.0940	U		M	R017218
7440-70-2	Calcium	46600			M	R017218
7440-47-3	Chromium	0.763	U	U	M	R017218
7440-48-4	Cobalt	0.0637	J		M	R017218
7440-50-8	Copper	1.41	J	U	M	R017218
7439-89-6	Iron	141	J		M	R017218
7439-92-1	Lead	0.0750	U	J	M	R017218
7439-95-4	Magnesium	13200	J	U	M	R017218
7439-96-5	Manganese	2.87	J		M	R017218
7439-97-6	Mercury	0.018	U	J	CV	R017123
7440-02-0	Nickel	1.50			M	R017218
7440-09-7	Potassium	1510			M	R017218
7782-49-2	Selenium	0.110	U	J	M	R017218
7440-22-4	Silver	0.0850	U		M	R017218
7440-23-5	Sodium	2860			M	R017218
7440-28-0	Thallium	0.0440	U		M	R017218
7440-62-2	Vanadium	0.190	U	U	M	R017218
7440-66-6	Zinc	6.44	U	U	M	R017218

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment: _____

MW
5-20-07 MET-7



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720 Third Avenue, Suite 1700, Seattle, WA 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: May 28, 2007

TO: Steve Hall, Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington *MW*

SUBJ: **Inorganic Data Quality Assurance Review, Avery Landing Site, Avery, Idaho**

REF: TDD: 07-03-0004 PAN: 002233.0193.01SF

The data quality assurance review of 1 waste, 14 soil, and 9 water samples collected from the Avery Landing site in Avery, Idaho, has been completed. Target Analyte List (TAL) metals analyses (EPA Methods 6010, 6020, and 7471) were performed by Laucks Testing Services, Seattle, Washington.

The samples were numbered:

Water	07040111	07040136	07040137	07040138	07040139
	07040140	07040135	07040141	07040142	
Soil	07040102	07040105	07040106	07040108	07040110
	07040113	07040116	07040117	07040119	07040120
	07040122	07040124	07040127	07040129	
Waste	07040131				

Data Qualifications:

1. Sample Holding Times: Acceptable.

All water samples were preserved to a pH < 2. The samples were maintained at 4°C ($\pm 2^\circ\text{C}$) except one cooler which was received at 7.2 °C; no action was taken based on this slight outlier. The samples were collected on April 20, 2007, and were analyzed by May 15, 2007, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury). There are no holding times for waste samples.

2. Initial and Continuing Calibration: Satisfactory.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits of 90% to 110% except beryllium with high recoveries in continuing calibration verifications (CCVs) 4 through 11 (sequence R017284) and lead in CCV 4 (sequence R017284); associated positive sample results were qualified as estimated quantities (J). All AA recoveries were within QC limits of 80% to 120%.

3. Blanks: Satisfactory.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. The following elements were detected in the applicable calibration and/or preparation blanks and resulted in sample qualifications:

Batch R017284 (Water) Blank	Element	Concentration (ug/L)
Initial Calibration Blank (ICB)	Antimony	0.423
ICB	Selenium	0.163
Continuing Calibration Blank (CCB) 6	Thallium	-0.0796
CCB7	Thallium	-0.0809
Preparation Blank (PB)	Antimony	-0.0593
PB	Calcium	98.3
PB	Chromium	0.249
PB	Selenium	-0.114
PB	Thallium	-0.0966
PB	Mercury	-0.044

Batch R017339 (Soil) Blank	Element	Concentration (ug/L)
Initial Calibration Blank	Antimony	0.5
Preparation Blank	Mercury	-0.044

Associated sample results were qualified as not detected (U) if the sample result was less than five times the positive blank concentration. Associated sample results were qualified as estimated quantities (J or UJ) if the sample result was less than five times the absolute value of the negative blank concentration.

4. ICP Interference Check Sample: Acceptable.

An Interference Check Sample (ICS) was analyzed at the beginning and end of each sequence or at least twice every 8 hours, whichever was more frequent. All ICS (solution AB) results were within QC limits of 80% - 120% recovery.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Satisfactory.

A serial dilution analysis was performed per matrix per concentration or per sample delivery group, whichever was more frequent. All serial dilution results were within QC limits except magnesium, sodium, and zinc in the water analysis and cadmium and manganese in the soil analysis. Associated sample results were qualified as estimated quantities (J or UJ).

8. Matrix Spike Analysis: Satisfactory.

A matrix spike analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. Spike and spike duplicate recoveries were within the QC limits except antimony and potassium (low recoveries), arsenic and calcium (high recoveries), and magnesium (0 % recovery) in the soil spikes. Sample results associated with the low recovery outliers were qualified as estimated quantities (J or UJ). Positive sample results associated with the high recovery outliers were qualified as estimated quantities (J). Sample results associated with the 0% recovery outlier were qualified as estimated quantities (J for positive results) or rejected (R for sample quantitation limits).

9. Duplicate Analysis: Satisfactory.

A laboratory duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate results were within QC limits except antimony in the soil duplicate analysis. Associated sample results were qualified as estimated quantities (J or UJ).

10. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical methods, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

- J - The associated numerical value is an estimated quantity because the reported concentrations were less than the sample detection limits but greater than the instrument detection limits or because quality control criteria limits were not met.
- U - The material was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
- UJ - The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met.

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040111

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-001Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	32.0	U		M	R017284
7440-36-0	Antimony	0.626	U	U	M	R017284
7440-38-2	Arsenic	0.100	U		M	R017284
7440-39-3	Barium	0.400	U		M	R017284
7440-41-7	Beryllium	0.0430	U		M	R017284
7440-43-9	Cadmium	0.0940	U		M	R017284
7440-70-2	Calcium	116	U		M	R017284
7440-47-3	Chromium	0.569	U		M	R017284
7440-48-4	Cobalt	0.0280	U		M	R017284
7440-50-8	Copper	0.520	U		M	R017284
7439-89-6	Iron	28.1	J		M	R017284
7439-92-1	Lead	0.0750	U		M	R017284
7439-95-4	Magnesium	4.54	J	U	M	R017284
7439-96-5	Manganese	0.464	J		M	R017284
7439-97-6	Mercury	0.018	U		CV	R017124
7440-02-0	Nickel	0.110	U		M	R017284
7440-09-7	Potassium	11.0	U		M	R017284
7782-49-2	Selenium	0.229	U	U	M	R017284
7440-22-4	Silver	0.0850	U		M	R017284
7440-23-5	Sodium	203	J	U	M	R017284
7440-28-0	Thallium	0.0440	U		M	R017284
7440-62-2	Vanadium	0.116	J		M	R017284
7440-66-6	Zinc	1.87	J	U	M	R017284

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040136

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-002Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	2050			M	R017284
7440-36-0	Antimony	0.537	<u>U</u>	<u>U</u>	M	R017284
7440-38-2	Arsenic	88.6			M	R017284
7440-39-3	Barium	61.1			M	R017284
7440-41-7	Beryllium	0.106	J		M	R017284
7440-43-9	Cadmium	0.142	J		M	R017284
7440-70-2	Calcium	56600			M	R017284
7440-47-3	Chromium	3.91			M	R017284
7440-48-4	Cobalt	6.15			M	R017284
7440-50-8	Copper	8.43			M	R017284
7439-89-6	Iron	26100			M	R017284
7439-92-1	Lead	2.17			M	R017284
7439-95-4	Magnesium	8280	<u>J</u>	<u>E</u>	M	R017284
7439-96-5	Manganese	3300			M	R017284
7439-97-6	Mercury	0.018	<u>U</u>		CV	R017124
7440-02-0	Nickel	6.05			M	R017284
7440-09-7	Potassium	2950			M	R017284
7782-49-2	Selenium	0.289	<u>U</u>		M	R017284
7440-22-4	Silver	0.0850	<u>U</u>		M	R017284
7440-23-5	Sodium	3330	<u>J</u>	<u>E</u>	M	R017284
7440-28-0	Thallium	0.0440	<u>U</u>		M	R017284
7440-62-2	Vanadium	5.41			M	R017284
7440-66-6	Zinc	7.68	J	<u>E</u>	M	R017284

Color Before: Brown Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040137

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-003Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	74.9			M	R017284
7440-36-0	Antimony	0.219	<u>Am</u>	<u>UT</u>	M	R017284
7440-38-2	Arsenic	30.7			M	R017284
7440-39-3	Barium	84.4			M	R017284
7440-41-7	Beryllium	0.0430	U		M	R017284
7440-43-9	Cadmium	0.0940	U		M	R017284
7440-70-2	Calcium	59400			M	R017284
7440-47-3	Chromium	0.502	<u>Am</u>		M	R017284
7440-48-4	Cobalt	12.9			M	R017284
7440-50-8	Copper	0.520	U		M	R017284
7439-89-6	Iron	30800			M	R017284
7439-92-1	Lead	0.105	J		M	R017284
7439-95-4	Magnesium	7660	<u>J</u>	<u>E</u>	M	R017284
7439-96-5	Manganese	5510			M	R017284
7439-97-6	Mercury	0.018	<u>UT</u>		CV	R017124
7440-02-0	Nickel	5.80			M	R017284
7440-09-7	Potassium	3150			M	R017284
7782-49-2	Selenium	0.123	<u>Am</u>	<u>UT</u>	M	R017284
7440-22-4	Silver	0.0850	U		M	R017284
7440-23-5	Sodium	2150	<u>J</u>	<u>E</u>	M	R017284
7440-28-0	Thallium	0.0440	<u>UT</u>		M	R017284
7440-62-2	Vanadium	0.871	J		M	R017284
7440-66-6	Zinc	4.48	J	<u>E</u>	M	R017284

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040138

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-004Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	121			M	R017284
7440-36-0	Antimony	0.452	A	U	M	R017284
7440-38-2	Arsenic	13.7			M	R017284
7440-39-3	Barium	113			M	R017284
7440-41-7	Beryllium	0.0430	U		M	R017284
7440-43-9	Cadmium	0.0940	U		M	R017284
7440-70-2	Calcium	82300			M	R017284
7440-47-3	Chromium	0.465	A	U	M	R017284
7440-48-4	Cobalt	3.39			M	R017284
7440-50-8	Copper	0.689	J		M	R017284
7439-89-6	Iron	31300			M	R017284
7439-92-1	Lead	0.615	J		M	R017284
7439-95-4	Magnesium	14000	J	J	M	R017284
7439-96-5	Manganese	3430			M	R017284
7439-97-6	Mercury	0.018	UJ		CV	R017124
7440-02-0	Nickel	3.51			M	R017284
7440-09-7	Potassium	4160			M	R017284
7782-49-2	Selenium	0.110	UJ		M	R017284
7440-22-4	Silver	0.0850	U		M	R017284
7440-23-5	Sodium	4360	J	E	M	R017284
7440-28-0	Thallium	0.0440	UJ		M	R017284
7440-62-2	Vanadium	0.668	J		M	R017284
7440-66-6	Zinc	8.01	J	E	M	R017284

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040139

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-005Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	634			M	R017284
7440-36-0	Antimony	0.0949	U	U	M	R017284
7440-38-2	Arsenic	51.4			M	R017284
7440-39-3	Barium	72.1			M	R017284
7440-41-7	Beryllium	0.0430	U		M	R017284
7440-43-9	Cadmium	0.0940	U		M	R017284
7440-70-2	Calcium	44300			M	R017284
7440-47-3	Chromium	1.46			M	R017284
7440-48-4	Cobalt	1.24			M	R017284
7440-50-8	Copper	2.35			M	R017284
7439-89-6	Iron	23000			M	R017284
7439-92-1	Lead	0.583	J		M	R017284
7439-95-4	Magnesium	7760	J	H	M	R017284
7439-96-5	Manganese	2980			M	R017284
7439-97-6	Mercury	0.018	U		CV	R017124
7440-02-0	Nickel	2.53			M	R017284
7440-09-7	Potassium	2070	U		M	R017284
7782-49-2	Selenium	0.268	U		M	R017284
7440-22-4	Silver	0.0850	U		M	R017284
7440-23-5	Sodium	2670	J	H	M	R017284
7440-28-0	Thallium	0.0440	U		M	R017284
7440-62-2	Vanadium	1.71	J		M	R017284
7440-66-6	Zinc	7.94	J	H	M	R017284

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040140

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-006Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	32200			M	R017284
7440-36-0	Antimony	1.87	U		M	R017284
7440-38-2	Arsenic	58.6			M	R017284
7440-39-3	Barium	305			M	R017284
7440-41-7	Beryllium	1.84	J		M	R017284
7440-43-9	Cadmium	1.07			M	R017284
7440-70-2	Calcium	67300			M	R017284
7440-47-3	Chromium	35.6			M	R017284
7440-48-4	Cobalt	22.9			M	R017284
7440-50-8	Copper	132			M	R017284
7439-89-6	Iron	80500			M	R017284
7439-92-1	Lead	39.8			M	R017284
7439-95-4	Magnesium	26400	J	B	M	R017284
7439-96-5	Manganese	3920			M	R017284
7439-97-6	Mercury	0.018	UT		CV	R017124
7440-02-0	Nickel	37.8			M	R017284
7440-09-7	Potassium	8130			M	R017284
7782-49-2	Selenium	1.18			M	R017284
7440-22-4	Silver	0.532	J		M	R017284
7440-23-5	Sodium	5350	J	B	M	R017284
7440-28-0	Thallium	0.356	J		M	R017284
7440-62-2	Vanadium	53.2			M	R017284
7440-66-6	Zinc	68.3	J	B	M	R017284

Color Before: Brown Clarity Before: Cloudy Texture: _____Color After: Brown Clarity After: Cloudy Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040135

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-007Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	32.0	U		M	R017284
7440-36-0	Antimony	0.218	<i>Am</i> U		M	R017284
7440-38-2	Arsenic	0.303	J		M	R017284
7440-39-3	Barium	12.0			M	R017284
7440-41-7	Beryllium	0.0430	U		M	R017284
7440-43-9	Cadmium	0.0940	U		M	R017284
7440-70-2	Calcium	21800			M	R017284
7440-47-3	Chromium	0.359	<i>Am</i> U		M	R017284
7440-48-4	Cobalt	1.89			M	R017284
7440-50-8	Copper	0.520	U		M	R017284
7439-89-6	Iron	82.0			M	R017284
7439-92-1	Lead	0.0750	U		M	R017284
7439-95-4	Magnesium	6370	J	<i>E</i>	M	R017284
7439-96-5	Manganese	120			M	R017284
7439-97-6	Mercury	0.018	U		CV	R017124
7440-02-0	Nickel	1.31			M	R017284
7440-09-7	Potassium	1040			M	R017284
7782-49-2	Selenium	0.110	U		M	R017284
7440-22-4	Silver	0.0850	U		M	R017284
7440-23-5	Sodium	2000	J	<i>E</i>	M	R017284
7440-28-0	Thallium	0.0440	U		M	R017284
7440-62-2	Vanadium	0.135	J		M	R017284
7440-66-6	Zinc	3.43	J	<i>Am</i>	M	R017284

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040141

Lab Name: Laucke Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-008Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	32.0	U		M	R017284
7440-36-0	Antimony	0.465	<i>fm</i>	U	M	R017284
7440-38-2	Arsenic	46.6			M	R017284
7440-39-3	Barium	109			M	R017284
7440-41-7	Beryllium	0.0430	U		M	R017284
7440-43-9	Cadmium	0.0940	U		M	R017284
7440-70-2	Calcium	81700			M	R017284
7440-47-3	Chromium	0.537	<i>fm</i>	U	M	R017284
7440-48-4	Cobalt	2.63			M	R017284
7440-50-8	Copper	0.520	U		M	R017284
7439-89-6	Iron	50600			M	R017284
7439-92-1	Lead	0.0750	U		M	R017284
7439-95-4	Magnesium	9900	<i>J</i>	<i>E</i>	M	R017284
7439-96-5	Manganese	5630			M	R017284
7439-97-6	Mercury	0.018	<i>UJ</i>		CV	R017124
7440-02-0	Nickel	3.55			M	R017284
7440-09-7	Potassium	2680			M	R017284
7782-49-2	Selenium	0.272	<i>fm</i>	<i>UJ</i>	M	R017284
7440-22-4	Silver	0.0850	U		M	R017284
7440-23-5	Sodium	2710	<i>J</i>	<i>E</i>	M	R017284
7440-28-0	Thallium	0.0440	<i>UJ</i>		M	R017284
7440-62-2	Vanadium	1.24	J		M	R017284
7440-66-6	Zinc	5.03	J	<i>E</i>	M	R017284

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040142

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): WaterLab Sample ID: IDA02-009Level (low/med): LOWDate Received: 04/23/2007

% Solids: _____

Concentration Units : ug/L

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	79.7			M	R017284
7440-36-0	Antimony	0.222	<i>in</i>	<i>UJ</i>	M	R017284
7440-38-2	Arsenic	0.655	J		M	R017284
7440-39-3	Barium	9.30			M	R017284
7440-41-7	Beryllium	0.0430	U		M	R017284
7440-43-9	Cadmium	0.0940	U		M	R017284
7440-70-2	Calcium	22700			M	R017284
7440-47-3	Chromium	0.608	<i>in</i>	<i>U</i>	M	R017284
7440-48-4	Cobalt	0.0826	J		M	R017284
7440-50-8	Copper	0.746	J		M	R017284
7439-89-6	Iron	183			M	R017284
7439-92-1	Lead	0.178	J		M	R017284
7439-95-4	Magnesium	6460	<i>J</i>	<i>E</i>	M	R017284
7439-96-5	Manganese	0.946	J		M	R017284
7439-97-6	Mercury	0.018	<i>UJ</i>		CV	R017124
7440-02-0	Nickel	0.902	J		M	R017284
7440-09-7	Potassium	808			M	R017284
7782-49-2	Selenium	0.115	<i>in</i>	<i>UJ</i>	M	R017284
7440-22-4	Silver	0.0850	U		M	R017284
7440-23-5	Sodium	1950	<i>J</i>	<i>E</i>	M	R017284
7440-28-0	Thallium	0.0440	<i>UJ</i>		M	R017284
7440-62-2	Vanadium	0.258	J		M	R017284
7440-66-6	Zinc	5.04	J	<i>E</i>	M	R017284

Color Before: Colorless Clarity Before: Clear Texture: _____Color After: Colorless Clarity After: Clear Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040102

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-022Level (low/med): LOWDate Received: 04/23/2007% Solids: 88.1Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	11200			M	R017339
7440-36-0	Antimony	0.20	<i>20</i>	<i>5</i>	M	R017339
7440-38-2	Arsenic	17.3	<i>5</i>	<i>5</i>	M	R017339
7440-39-3	Barium	63.2			M	R017339
7440-41-7	Beryllium	0.40	J		M	R017339
7440-43-9	Cadmium	0.47	J	E	M	R017339
7440-70-2	Calcium	862	J	N	M	R017339
7440-47-3	Chromium	18.8			M	R017339
7440-48-4	Cobalt	8.8			M	R017339
7440-50-8	Copper	23.7			M	R017339
7439-89-6	Iron	24600			M	R017339
7439-92-1	Lead	11.0			M	R017339
7439-95-4	Magnesium	3420	<i>J</i>	N	M	R017339
7439-96-5	Manganese	403	<i>J</i>	E	M	R017339
7439-97-6	Mercury	0.0199	J		CV	R017362
7440-02-0	Nickel	16.5			M	R017339
7440-09-7	Potassium	1600	<i>J</i>	N	M	R017339
7782-49-2	Selenium	0.13	J	<i>5</i>	M	R017339
7440-22-4	Silver	0.14	J		M	R017339
7440-23-5	Sodium	52.2			M	R017339
7440-28-0	Thallium	0.11	J		M	R017339
7440-62-2	Vanadium	11.9			M	R017339
7440-66-6	Zinc	48.7			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Colorless Clarity After: _____ Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040105

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-023Level (low/med): LOWDate Received: 04/23/2007% Solids: 71.4Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	19500			M	R017339
7440-36-0	Antimony	0.074	J	*N	M	R017339
7440-38-2	Arsenic	8.6	J	N	M	R017339
7440-39-3	Barium	113			M	R017339
7440-41-7	Beryllium	0.67	J		M	R017339
7440-43-9	Cadmium	0.52	J	E	M	R017339
7440-70-2	Calcium	2720	J	N	M	R017339
7440-47-3	Chromium	18.4			M	R017339
7440-48-4	Cobalt	8.4			M	R017339
7440-50-8	Copper	21.5			M	R017339
7439-89-6	Iron	20000		*	M	R017339
7439-92-1	Lead	9.5			M	R017339
7439-95-4	Magnesium	7760	J	N	M	R017339
7439-96-5	Manganese	260	J	E	M	R017339
7439-97-6	Mercury	0.0124	J		CV	R017362
7440-02-0	Nickel	16.3			M	R017339
7440-09-7	Potassium	2940	J	N	M	R017339
7782-49-2	Selenium	0.28	J	NW	M	R017339
7440-22-4	Silver	0.15	J		M	R017339
7440-23-5	Sodium	477			M	R017339
7440-28-0	Thallium	0.20	J		M	R017339
7440-62-2	Vanadium	25.4			M	R017339
7440-66-6	Zinc	47.3			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Colorless Clarity After: _____ Artifacts: No
 Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040106

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-024Level (low/med): LOWDate Received: 04/23/2007% Solids: 70.8Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	14900			M	R017339
7440-36-0	Antimony	0.10	J	*N	M	R017339
7440-38-2	Arsenic	7.3	J	N	M	R017339
7440-39-3	Barium	92.8			M	R017339
7440-41-7	Beryllium	0.47	J		M	R017339
7440-43-9	Cadmium	0.45	J	E	M	R017339
7440-70-2	Calcium	1480	J	N	M	R017339
7440-47-3	Chromium	11.9			M	R017339
7440-48-4	Cobalt	6.2			M	R017339
7440-50-8	Copper	20.8			M	R017339
7439-89-6	Iron	15100			M	R017339
7439-92-1	Lead	9.3			M	R017339
7439-95-4	Magnesium	5830	J	N	M	R017339
7439-96-5	Manganese	188	J	E	M	R017339
7439-97-6	Mercury	0.0114	J		CV	R017362
7440-02-0	Nickel	13.3			M	R017339
7440-09-7	Potassium	1980	J	N	M	R017339
7782-49-2	Selenium	0.36	J	mc	M	R017339
7440-22-4	Silver	0.11	J		M	R017339
7440-23-5	Sodium	86.3			M	R017339
7440-28-0	Thallium	0.15	J		M	R017339
7440-62-2	Vanadium	20.5			M	R017339
7440-66-6	Zinc	42.2			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Colorless Clarity After: _____ Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040108

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-025Level (low/med): LOWDate Received: 04/23/2007% Solids: 87.8Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	11200			M	R017339
7440-36-0	Antimony	1.3	J	N	M	R017339
7440-38-2	Arsenic	12.0	J	N	M	R017339
7440-39-3	Barium	193			M	R017339
7440-41-7	Beryllium	0.62	I		M	R017339
7440-43-9	Cadmium	0.81	J	E	M	R017339
7440-70-2	Calcium	6390	J	N	M	R017339
7440-47-3	Chromium	15.1			M	R017339
7440-48-4	Cobalt	6.5			M	R017339
7440-50-8	Copper	101			M	R017339
7439-89-6	Iron	19700			M	R017393
7439-92-1	Lead	145			M	R017339
7439-95-4	Magnesium	8060	J	N	M	R017339
7439-96-5	Manganese	354	J	E	M	R017339
7439-97-6	Mercury	0.0553	I		CV	R017362
7440-02-0	Nickel	24.9			M	R017339
7440-09-7	Potassium	3250	J	N	M	R017339
7782-49-2	Selenium	0.22	I	N	M	R017339
7440-22-4	Silver	0.16	I		M	R017339
7440-23-5	Sodium	292			M	R017339
7440-28-0	Thallium	0.16	I		M	R017339
7440-62-2	Vanadium	30.2			M	R017339
7440-66-6	Zinc	101			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Brown Clarity After: _____ Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040110

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-026Level (low/med): LOWDate Received: 04/23/2007% Solids: 78.2Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	13500			M	R017339
7440-36-0	Antimony	0.21	J	N	M	R017339
7440-38-2	Arsenic	5.7	J	N	M	R017339
7440-39-3	Barium	76.3			M	R017339
7440-41-7	Beryllium	0.57	J		M	R017339
7440-43-9	Cadmium	0.39	J	E	M	R017339
7440-70-2	Calcium	2310	J	N	M	R017339
7440-47-3	Chromium	13.2			M	R017339
7440-48-4	Cobalt	6.9			M	R017339
7440-50-8	Copper	25.1			M	R017339
7439-89-6	Iron	18000			M	R017339
7439-92-1	Lead	6.1			M	R017339
7439-95-4	Magnesium	6190	J	N	M	R017339
7439-96-5	Manganese	271	J	E	M	R017339
7439-97-6	Mercury	0.0119	J		CV	R017362
7440-02-0	Nickel	13.1			M	R017339
7440-09-7	Potassium	2460	J	N	M	R017339
7782-49-2	Selenium	0.38	J	N	M	R017339
7440-22-4	Silver	0.10	J		M	R017339
7440-23-5	Sodium	113	J		M	R017339
7440-28-0	Thallium	0.16	J		M	R017339
7440-62-2	Vanadium	25.6			M	R017339
7440-66-6	Zinc	34.9			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Colorless Clarity After: _____ Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040113

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-027Level (low/med): LOWDate Received: 04/23/2007% Solids: 72.3Concentration Units: mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	15800			M	R017339
7440-36-0	Antimony	0.12	J	*N	M	R017339
7440-38-2	Arsenic	7.5	J	N	M	R017339
7440-39-3	Barium	96.0			M	R017339
7440-41-7	Beryllium	0.54	J		M	R017339
7440-43-9	Cadmium	0.43	J	E	M	R017339
7440-70-2	Calcium	1910	J	N	M	R017339
7440-47-3	Chromium	12.8			M	R017339
7440-48-4	Cobalt	8.5			M	R017339
7440-50-8	Copper	20.7			M	R017339
7439-89-6	Iron	16900			M	R017339
7439-92-1	Lead	8.3			M	R017339
7439-95-4	Magnesium	6570	J	N	M	R017339
7439-96-5	Manganese	319	J	E	M	R017339
7439-97-6	Mercury	0.0105	J		CV	R017362
7440-02-0	Nickel	13.4			M	R017339
7440-09-7	Potassium	1720	J	N	M	R017339
7782-49-2	Selenium	0.39	J	N	M	R017339
7440-22-4	Silver	0.11	J		M	R017339
7440-23-5	Sodium	106			M	R017339
7440-28-0	Thallium	0.16	J		M	R017339
7440-62-2	Vanadium	23.0			M	R017339
7440-66-6	Zinc	42.5			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Colorless Clarity After: _____ Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040116

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-029Level (low/med): LOWDate Received: 04/23/2007* Solids: 85.3Concentration Units: mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	14100			M	R017339
7440-36-0	Antimony	0.17	J	N	M	R017339
7440-38-2	Arsenic	15.7	J	N	M	R017339
7440-39-3	Barium	125			M	R017339
7440-41-7	Beryllium	0.46			M	R017339
7440-43-9	Cadmium	0.53	J	E	M	R017339
7440-70-2	Calcium	1620	J	N	M	R017339
7440-47-3	Chromium	12.1			M	R017339
7440-48-4	Cobalt	7.1			M	R017339
7440-50-8	Copper	20.5			M	R017339
7439-89-6	Iron	18900			M	R017339
7439-92-1	Lead	17.3			M	R017339
7439-95-4	Magnesium	7460	J	N	M	R017339
7439-96-5	Manganese	200	J	E	M	R017339
7439-97-6	Mercury	0.00640	UT		CV	R017362
7440-02-0	Nickel	16.1			M	R017339
7440-09-7	Potassium	3500	J	N	M	R017339
7782-49-2	Selenium	0.23	J	N	M	R017339
7440-22-4	Silver	0.12	J		M	R017339
7440-23-5	Sodium	70.4			M	R017339
7440-28-0	Thallium	0.17	J		M	R017339
7440-62-2	Vanadium	22.1			M	R017339
7440-66-6	Zinc	26.0			M	R017339

Color Before: Brown

Clarity Before: _____

Texture: MediumColor After: Yellow

Clarity After: _____

Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040117

Lab Name: Lauck's Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-030Level (low/med): LOWDate Received: 04/23/2007% Solids: 85.5Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	12100			M	R017339
7440-36-0	Antimony	1.1	J	N	M	R017339
7440-38-2	Arsenic	16.9	J	N	M	R017339
7440-39-3	Barium	174			M	R017339
7440-41-7	Beryllium	0.46	J		M	R017339
7440-43-9	Cadmium	0.78	J	E	M	R017339
7440-70-2	Calcium	4370	J	N	M	R017339
7440-47-3	Chromium	12.3			M	R017339
7440-48-4	Cobalt	19.2			M	R017339
7440-50-8	Copper	71.6			M	R017339
7439-89-6	Iron	19300			M	R017339
7439-92-1	Lead	159			M	R017339
7439-95-4	Magnesium	6590	J	N	M	R017339
7439-96-5	Manganese	288	J	E	M	R017339
7439-97-6	Mercury	0.117			CV	R017362
7440-02-0	Nickel	32.3			M	R017339
7440-09-7	Potassium	2740	J	N	M	R017339
7782-49-2	Selenium	0.21	J	N	M	R017339
7440-22-4	Silver	0.17	J		M	R017339
7440-23-5	Sodium	139			M	R017339
7440-28-0	Thallium	0.14	J		M	R017339
7440-62-2	Vanadium	21.9			M	R017339
7440-66-6	Zinc	72.3			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Brown Clarity After: _____ Artifacts: NoComment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040119

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-031Level (low/med): LOWDate Received: 04/23/2007% Solids: 76.6Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	13100			M	R017339
7440-36-0	Antimony	0.099	J	N	M	R017339
7440-38-2	Arsenic	4.2	J	N	M	R017339
7440-39-3	Barium	65.6			M	R017339
7440-41-7	Beryllium	0.46	J		M	R017339
7440-43-9	Cadmium	0.36	J	E	M	R017339
7440-70-2	Calcium	1930	J	N	M	R017339
7440-47-3	Chromium	10.9			M	R017339
7440-48-4	Cobalt	5.5			M	R017339
7440-50-8	Copper	18.7			M	R017339
7439-89-6	Iron	15000			M	R017339
7439-92-1	Lead	7.7			M	R017339
7439-95-4	Magnesium	5750	J	N	M	R017339
7439-96-5	Manganese	98.3	J	E	M	R017339
7439-97-6	Mercury	0.00713	UJ		CV	R017362
7440-02-0	Nickel	12.9			M	R017339
7440-09-7	Potassium	2060	J	N	M	R017339
7782-49-2	Selenium	0.30	J	N	M	R017339
7440-22-4	Silver	0.078	J		M	R017339
7440-23-5	Sodium	89.5			M	R017339
7440-28-0	Thallium	0.13	J		M	R017339
7440-62-2	Vanadium	23.5			M	R017339
7440-66-6	Zinc	34.4			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Colorless Clarity After: _____ Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040120

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-032Level (low/med): LOWDate Received: 04/23/2007% Solids: 89.4Concentration Units: mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	10200			M	R017339
7440-36-0	Antimony	0.49	J	N	M	R017339
7440-38-2	Arsenic	16.1	J	N	M	R017339
7440-39-3	Barium	175			M	R017339
7440-41-7	Beryllium	0.42	J		M	R017339
7440-43-9	Cadmium	0.86		E	M	R017339
7440-70-2	Calcium	3110	J	N	M	R017339
7440-47-3	Chromium	12.0			M	R017339
7440-48-4	Cobalt	6.3			M	R017339
7440-50-8	Copper	44.7			M	R017339
7439-89-6	Iron	16300			M	R017339
7439-92-1	Lead	69.1			M	R017339
7439-95-4	Magnesium	4180	J	N	M	R017339
7439-96-5	Manganese	315	J	E	M	R017339
7439-97-6	Mercury	0.0312	J		CV	R017362
7440-02-0	Nickel	17.8			M	R017339
7440-09-7	Potassium	1920	J	N	M	R017339
7782-49-2	Selenium	0.31	J	N	M	R017339
7440-22-4	Silver	0.14	J		M	R017339
7440-23-5	Sodium	203			M	R017339
7440-28-0	Thallium	0.12	J		M	R017339
7440-62-2	Vanadium	29.9			M	R017339
7440-66-6	Zinc	111			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Brown Clarity After: _____ Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040122

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-033Level (low/med): LOWDate Received: 04/23/2007% Solids: 78.3Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	13000			M	R017339
7440-36-0	Antimony	0.063	J	N	M	R017339
7440-38-2	Arsenic	5.4	J	N	M	R017339
7440-39-3	Barium	65.8			M	R017339
7440-41-7	Beryllium	0.49			M	R017339
7440-43-9	Cadmium	0.36	J	E	M	R017339
7440-70-2	Calcium	1530	J	N	M	R017339
7440-47-3	Chromium	11.2			M	R017339
7440-48-4	Cobalt	7.1			M	R017339
7440-50-8	Copper	18.1			M	R017339
7439-89-6	Iron	16800			M	R017339
7439-92-1	Lead	4.3			M	R017339
7439-95-4	Magnesium	5320	J	N	M	R017339
7439-96-5	Manganese	240	J	E	M	R017339
7439-97-6	Mercury	0.00697	UJ		CV	R017362
7440-02-0	Nickel	12.9			M	R017339
7440-09-7	Potassium	1960	J	N	M	R017339
7782-49-2	Selenium	0.21	J	N	M	R017339
7440-22-4	Silver	0.081	J		M	R017339
7440-23-5	Sodium	101			M	R017339
7440-28-0	Thallium	0.16	J		M	R017339
7440-62-2	Vanadium	22.3			M	R017339
7440-66-6	Zinc	29.5			M	R017339

Color Before: Brown Clarity Before: _____ Texture: MediumColor After: Colorless Clarity After: _____ Artifacts: No

Comment _____

SW-846
-1-
INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040124

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKS

SDG No.: IDA02

Matrix (soil/water): Soil

Lab Sample ID: IDA02-034

Level (low/med): LOW

Date Received: 04/23/2007

% Solids: 87.4

Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	11100			M	R017339
7440-36-0	Antimony	0.059	J	N	M	R017339
7440-38-2	Arsenic	17.0	J	N	M	R017339
7440-39-3	Barium	62.4			M	R017339
7440-41-7	Beryllium	0.40	J		M	R017339
7440-43-9	Cadmium	0.29	J	E	M	R017339
7440-70-2	Calcium	1740	J	N	M	R017339
7440-47-3	Chromium	10.8			M	R017339
7440-48-4	Cobalt	7.9			M	R017339
7440-50-8	Copper	21.3			M	R017339
7439-89-6	Iron	18400			M	R017339
7439-92-1	Lead	2.3			M	R017339
7439-95-4	Magnesium	6670	J	N	M	R017339
7439-96-5	Manganese	201	J	E	M	R017339
7439-97-6	Mercury	0.00625	UJ		CV	R017362
7440-02-0	Nickel	15.0			M	R017339
7440-09-7	Potassium	3240	J	N	M	R017339
7782-49-2	Selenium	0.19	J	N	M	R017339
7440-22-4	Silver	0.070	J		M	R017339
7440-23-5	Sodium	89.7			M	R017339
7440-28-0	Thallium	0.26	J		M	R017339
7440-62-2	Vanadium	19.5			M	R017339
7440-66-6	Zinc	18.4			M	R017339

Color Before: Brown Clarity Before: _____ Texture: Coarse

Color After: Colorless Clarity After: _____ Artifacts: No

Comment _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040127

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-035Level (low/med): LOWDate Received: 04/23/2007% Solids: 79Concentration Units: mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	12700			M	R017339
7440-36-0	Antimony	0.070	J	N	M	R017339
7440-38-2	Arsenic	6.1	J	N	M	R017339
7440-39-3	Barium	69.2			M	R017339
7440-41-7	Beryllium	0.39	J		M	R017339
7440-43-9	Cadmium	0.41	J	E	M	R017339
7440-70-2	Calcium	1290	J	N	M	R017339
7440-47-3	Chromium	10.7			M	R017339
7440-48-4	Cobalt	6.9			M	R017339
7440-50-8	Copper	20.2			M	R017339
7439-89-6	Iron	17100			M	R017339
7439-92-1	Lead	6.3			M	R017339
7439-95-4	Magnesium	5290	J	N	M	R017339
7439-96-5	Manganese	221	J	E	M	R017339
7439-97-6	Mercury	0.00691	UJ		CV	R017362
7440-02-0	Nickel	12.1			M	R017339
7440-09-7	Potassium	1940	J	N	M	R017339
7782-49-2	Selenium	0.26	J	W	M	R017339
7440-22-4	Silver	0.086	J		M	R017339
7440-23-5	Sodium	89.5			M	R017339
7440-28-0	Thallium	0.15	J		M	R017339
7440-62-2	Vanadium	21.0			M	R017339
7440-66-6	Zinc	33.4			M	R017339

Color Before: Brown Clarity Before: _____ Texture: FineColor After: Colorless Clarity After: _____ Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040129

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-036Level (low/med): LOWDate Received: 04/23/2007% Solids: 89.6Concentration Units : mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	7760			M	R017339
7440-36-0	Antimony	0.066	J	*N	M	R017339
7440-38-2	Arsenic	5.1	J	N	M	R017339
7440-39-3	Barium	44.3			M	R017339
7440-41-7	Beryllium	0.24	J		M	R017339
7440-43-9	Cadmium	0.23	J		M	R017339
7440-70-2	Calcium	1580	J	N	M	R017339
7440-47-3	Chromium	7.7			M	R017339
7440-48-4	Cobalt	5.6			M	R017339
7440-50-8	Copper	43.0			M	R017339
7439-89-6	Iron	15100			M	R017339
7439-92-1	Lead	4.7			M	R017339
7439-95-4	Magnesium	4170	J	N	M	R017339
7439-96-5	Manganese	120	J		M	R017339
7439-97-6	Mercury	0.00609	UJ		CV	R017362
7440-02-0	Nickel	8.7			M	R017339
7440-09-7	Potassium	1960	J	N	M	R017339
7782-49-2	Selenium	0.16	J	N	M	R017339
7440-22-4	Silver	0.055	J		M	R017339
7440-23-5	Sodium	108			M	R017339
7440-28-0	Thallium	0.094	J		M	R017339
7440-62-2	Vanadium	28.3			M	R017339
7440-66-6	Zinc	20.7			M	R017339

Color Before: Brown Clarity Before: _____ Texture: CoarseColor After: Colorless Clarity After: _____ Artifacts: No

Comment: _____

INORGANIC ANALYSES DATA SHEET

SAMPLE NO.

07040131

Lab Name: Laucks Laboratories

Contract: _____

Lab Code: LAUCKSSDG No.: IDA02Matrix (soil/water): SoilLab Sample ID: IDA02-037Level (low/med): LOWDate Received: 04/23/2007% Solids: 100Concentration Units: mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	Run Seq.
7429-90-5	Aluminum	71.2			M	R017339
7440-36-0	Antimony	0.28	J	N	M	R017339
7440-38-2	Arsenic	3.1		N	M	R017339
7440-39-3	Barium	2.3			M	R017339
7440-41-7	Beryllium	0.013	U		M	R017339
7440-43-9	Cadmium	0.061	J	E	M	R017339
7440-70-2	Calcium	55.9	J	N	M	R017339
7440-47-3	Chromium	3.4			M	R017339
7440-48-4	Cobalt	0.38			M	R017339
7440-50-8	Copper	10.9			M	R017339
7439-89-6	Iron	35.9			M	R017339
7439-92-1	Lead	1.6			M	R017339
7439-95-4	Magnesium	1.3	U	N	M	R017339
7439-96-5	Manganese	0.74	J	E	M	R017339
7439-97-6	Mercury	0.00546	U		CV	R017362
7440-02-0	Nickel	21.8			M	R017339
7440-09-7	Potassium	7.6	J	N	M	R017339
7782-49-2	Selenium	0.23	J		M	R017339
7440-22-4	Silver	0.038	J		M	R017339
7440-23-5	Sodium	5.5	J		M	R017339
7440-28-0	Thallium	0.0091	U		M	R017339
7440-62-2	Vanadium	21.9			M	R017339
7440-66-6	Zinc	1.5	U		M	R017339

Color Before: Brown Clarity Before: _____ Texture: FineColor After: Orange Clarity After: _____ Artifacts: NoComment: _____



**Potlatch Corporation
Resource Management Group
Idaho Region**

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

August 7, 2000

**State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648**

Attention: Kreg Beck

**RE: Site Characterization Report (SCR) and Second quarter Performance Report –
Avery Landing**

Dear Kreg:

In accordance with our Consent Order Modification dated April 20, 2000, Potlatch Corporation submits our Site Characterization Report for the Avery Landing Site. The Site Characterization Report was prepared by our Environmental Engineering Consultant, Hart Crowser, Inc., and it is attached for your review and comment.

The corrective action plan is in its final stages and you should receive the Final Plan by August 15, 2000.

Kreg, if you have any questions feel free to call me at my St. Maries office.

Sincerely,

A handwritten signature in black ink, reading "Norm Linton", with a long horizontal flourish extending to the right.

**Norm Linton
Area Manager**

**cc: John Emery
Greg Rapp**



HARTCROWSER

Delivering smarter solutions

www.hartcrowser.com

August 4, 2000

Anchorage

Mr. Norm Linton
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Re: Site Characterization and Second Quarter 2000 Performance Report
Avery Landing Recovery System
J-2296-07

Chicago

Dear Mr. Linton:

Denver

Hart Crowser is pleased to present the Site Characterization and Second Quarter 2000 Performance Report for the Avery Landing free product recovery system. This letter report presents the results of our site characterization work completed in June 2000 and the second quarter groundwater elevations and product thickness measurements.

Fairbanks

SITE CHARACTERIZATION

Jersey City

The purpose of the site characterization was to better define the areal extent of petroleum impacted soil at the Avery Landing site and to determine the depth of free product. To accomplish this, twelve test pits were completed during the site characterization work. Slotted monitoring well casings were installed in eleven of the test pits. Test pit TP-1 had two slotted well casings installed. One casing was 2 inches in depth and the second was 4 inches. No casing was installed in TP-4 because free product was not encountered. This allowed us to install an extra monitoring well, TP-11, in a separate area needing better product delineation. The remaining ten test pit locations had 4-inch casings installed. Figure 1 depicts the location of the test pits and the estimated areal extent of free product based on field observations.

Juneau

Long Beach

Test pits TP-2, TP-3, TP-5, TP-7, TP-10, and TP-12 contained a visible sheen of product during installation. Upgradient wells were installed within the free product zone, while the downgradient wells were moved slightly outside the plume when possible. This will allow better plume delineation over the course of the remediation. As product is removed from the subsurface, the product thickness in the upgradient wells should decrease. Product

Portland

Seattle



occurring in downgradient wells will indicate migration of the plume. The newly installed wells will be monitored on the same schedule as existing wells.

GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Four extraction wells (EW-1 through EW-4), two piezometers (P1 and P2), four monitoring wells (MW-5, MW-11, HC-1, and HC-4), and twelve test pits (TP-1 (2"), TP-1 (4"), TP-2, TP-3, TP-5, TP-6, TP-7, TP-8, TP-9, TP-10, TP-11, and TP-12) were monitored on June 14, 2000. Well, piezometer, and test pit locations are shown on Figure 1. At each monitoring location, depth to product and depth to groundwater measurements were performed using a Solinst, a free product measuring device.

The extraction well operation was observed as follows:

- ▶ EW-1 is no longer in use, as described in the 1998 Annual Report;
- ▶ EW-2 was operating and maintaining groundwater depression; and
- ▶ EW-3 and EW-4 were operating but not maintaining groundwater capture. Free product was not detected in either EW-3 or EW-4.

Based on both past and present data, the plume area is defined as shown on Figure 1. The free product area did not differ dramatically from what was originally estimated, but the estimated depth of product over that area has decreased significantly. Based on the monitoring points in TP-1, it appears the product depth in the 2-inch monitoring wells may be exaggerating the depth of product by an order of magnitude. The 4-inch casings installed seem to be much more representative of the actual product depth in the soils. TP-1 was left open for two days to best show the actual *in situ* depth of product. The measured depth of product in TP-1 after two days was 0.04 foot. This was the same as the depth measured in the 4-inch casing, and 10 times less than that measured in the 2-inch casing. Future monitoring events should continue to show a smaller overall depth of product for the site than was originally estimated. Using a conservative estimate of 0.03 foot of product over the entire plume area of 92,000 square feet, approximately 21,000 gallons of oil may exist on site.



FREE PRODUCT RECOVERY

The current approximate total product removed is 775 gallons. About 25 gallons of product have been extracted in the last two quarters of system operation. Product recovery rates usually increase during the low water summer months.

PROJECT SCHEDULE

Table 2 presents the project schedule for the remainder of 2000. We plan to perform the next monitoring event on September 20, 2000, and will submit the third quarter monitoring report by October 13, 2000. Construction of the containment wall is scheduled for the second and third weeks of September. The construction schedule depends on Potlatch receiving the required permits.

**Table 2- Avery Landing Recovery System
2000 Project Schedule**

<u>Activity</u>	<u>Schedule</u>
Containment Wall Construction	September 11-20, 2000
Perform 3rd Quarter Site Visit	September 20, 2000
Submit 3rd Quarter Monitoring Report	October 13, 2000
Perform 4th Quarter Site Visit	December 7, 2000
Submit 4th Quarter Monitoring Report	December 29, 2000
Submit Annual Summary Report	February 9, 2001

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed, in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.



Potlatch Corporation
August 4, 2000

J-2296-07
Page 4

If additional information or clarification is required, please call Terry Montoya at
(206) 324-9530.

Sincerely,

HART CROWSER, INC.

Terry Montoya by sjs
TERRY MONTOYA
Project Engineer

Matt Schultz by Kreg Beck
MATT SCHULTZ, P.E.
Senior Associate Engineer

F:\docs\jobs\229607\2ndQtr00.doc

Attachments:

Table 1 - Avery Landing Groundwater and River Monitoring Data

Figure 1 - Avery Landing First Quarter 2000 Groundwater Flow Direction Map

cc: Kreg Beck, Idaho Department of Environmental Quality

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-1	10/27/1994	ND	11	0	95.34	84.34
	6/30/1995	ND	10.9	0	95.34	84.44
	9/21/95	11.25	11.27	0.02	95.34	84.07
	7/11/1996	ND	9.74	0	95.34	85.60
	9/11/1996	ND	10.88	0	95.34	84.46
	11/5/1996	ND	11.94	0	95.34	83.40
	7/17/1997	ND	10.38	0	95.34	84.96
	10/9/1997	ND	13.17	0	95.34	82.17
	6/25/1998	ND	10.01	0	95.34	85.33
	8/12/1998	NM	10.52	0	95.34	84.82
	10/22/1998	Sheen	10.86	0	95.34	84.48
	3/18/1999			0	95.34	85.57
	6/22/1999	ND	11.68	0	95.34	83.66
	9/16/1999	ND	10.72	0	95.34	84.62
	12/2/1999	ND	9.78	0	95.34	85.56
	3/30/2000	ND	9.03	0	95.34	86.31
EW-2	10/27/1994	ND	10.37	0	95.24	84.87
	6/30/1995	10.57	10.89	0.32	95.24	84.35
	9/21/95	13.9	13.92	0.02	95.24	81.32
	7/11/1996	11.03	11.66	0.63	95.24	83.58
	9/11/1996	Sheen	14.00	0	95.24	81.24
	11/5/1996	Sheen	12.27	0	95.24	82.97
	7/17/1997	8.99	9.09	0.1	95.24	86.15
	10/9/1997	Sheen	15.44	0	95.24	79.80
	6/25/1998	9.19	9.64	0.45	95.24	85.60
	8/12/1998	NM	9.99	0	95.24	85.25
	10/22/1998	Sheen	10.94	0	95.24	84.30
	3/18/1999	10.17	10.27	0.1	95.24	84.97
	6/22/1999	11.3	11.31	0.01	95.24	83.93
	9/16/1999	15.32	15.35	0.03	95.24	79.89
	12/2/1999	9.91	10.1	0.19	95.24	85.14
	3/30/2000	9.5	10.29	0.79	95.24	84.95
	6/14/2000	8.89	9.39	0.5	95.24	85.85
EW-3	10/27/1994	ND	10.05	0	95.78	85.73
	6/30/1995	9.35	9.8	0.45	95.78	85.98
	9/21/95	10.92	11.08+	0.16	95.78	84.70
	7/11/1996	8.53	8.64	0.11	95.78	87.14
	9/11/1996	10.75	11.70	0.95	95.78	84.08
	11/5/1996	Sheen	11.8	0	95.78	83.98
	7/17/1997	9.13	9.33	0.2	95.78	86.45
	10/9/1997	10.9	11.68	0.78	95.78	84.10
	6/25/1998	8.78	9.43	0.65	95.78	86.35
	8/12/1998	ND	11	0	95.78	84.78
	10/22/1998	12.58	13.38	0.8	95.78	82.40

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-3 (Continued)	3/18/1999	9.03	9.23	0.2	95.78	86.55
	6/22/1999	11.1	11.25	0.15	95.78	84.53
	9/16/1999	10.76	11.06	0.3	95.78	84.72
	12/2/1999	9.04	9.1	0.06	95.78	86.68
	3/30/2000	ND	9.08	0	95.78	86.70
	6/14/2000	ND	7.68	0	95.78	88.10
EW-4	10/27/1994	ND	8.05	0	94.32	86.27
	6/30/1995	7.84	7.85	0.01	94.32	86.47
	9/21/95	8.22	8.24	0.02	94.32	86.08
	7/11/1996	Sheen	6.44	0	94.32	87.88
	11/5/1996	Sheen	8.08	0	94.32	86.24
	7/17/1997	Sheen	5.43	0	94.32	88.89
	10/9/1997	Sheen	7.11	0	94.32	87.21
	6/25/1998	5.28	5.3	0.02	94.32	89.02
	8/12/1998	NM	8.98	0	94.32	85.34
	10/22/1998	ND	8.98	0	94.32	85.34
	3/18/1999	5.18	5.26	0	94.32	89.06
	6/22/1999	Sheen	9	0	94.32	85.32
	9/16/1999	8.45	9.27	0.82	94.32	85.05
	12/2/1999	7.31	7.36	0.05	94.32	86.96
	3/30/2000	Sheen	6.5	0	94.32	87.82
	6/14/2000	ND	4.69	0	94.32	89.63
HC-1	10/27/1994	ND	13.25	0	97.50	84.25
	6/30/1995	ND	12.00	0	97.50	85.50
	9/21/95	NM	13.42	0	97.50	84.08
	7/11/1996	ND	11.92	0	97.50	85.58
	9/11/1996	ND	12.90	0	97.50	84.60
	11/5/1996	Could not locate due to snow				
	7/17/1997	ND	11.27	0	97.50	86.23
	10/9/1997	ND	12.87	0	97.50	84.63
	6/25/1998	ND	11.85	0	97.50	85.65
	8/12/1998	NM	12.97	0	97.50	84.53
	10/22/1998	ND	13.1	0	97.50	84.40
	3/18/1999	ND	11.7	0	97.50	85.80
	6/22/1999	ND	9.28	0	97.50	88.22
	9/16/1999	ND	12.98	0	97.50	84.52
	12/2/1999	Well Under Standing Water				
	3/30/2000	ND	11.24	0	97.50	86.26
	6/14/2000	ND	10.73	0	97.50	86.77
HC-4	10/27/1994	13.3	15.34	2.04	98.94	83.60
	6/30/1995	11.89	15.49	3.6	98.94	83.45
	9/21/95	13.67	NM	NM	98.94	85.27
	7/11/1996	11.58	12.93	1.35	98.94	86.01
	9/11/1996	13.53	13.93	0.40	98.94	85.01
	11/5/1996	11.82	13.62	1.80	98.94	85.32

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
HC-4 (Continued)	7/17/1997	11.65	13.25	1.60	98.94	85.69
	10/9/1997	12.67	14.92	2.25	98.94	84.02
	6/25/1998	11.53	12.49	0.96	98.94	86.45
	8/12/1998	NM	13.9	NM	98.94	85.04
	10/22/1998	10.3	14.7	4.40	98.94	84.24
	3/18/1999	10.5	14.05	4.45	98.94	84.89
	6/22/1999	16.9	13.9	4.00	98.94	85.04
	9/16/1999	15.89	17.57	1.68	98.94	81.37
	12/2/1999	Not Measured				
	3/30/2000	10.68	11.70	1.02	98.94	87.24
	6/14/2000	10.41	10.92	0.51	98.94	88.02
HC-5	11/5/1996	ND	11.22	0	97.95	86.73
	7/17/1997	Monument under standing water				
	10/9/1997	Monument under standing water				
	6/25/1998	Lost during road construction				
	6/14/2000	ND	7.71	0	97.95	90.24
MW-4	9/14/94	ND	12.88	0	99.76	86.88
	6/30/95	ND	10.19	0	99.76	89.57
	9/21/95	ND	11.95	0	99.76	87.81
	7/11/1996	Sheen	10.18	0	99.76	89.58
	9/11/1996	Sheen	11.33	0	99.76	88.43
	11/5/1996	Lost during road construction				
MW-5	10/27/1994	ND	10.45	0	97.76	87.31
	6/30/1995	ND	9.13	0	97.76	88.63
	9/21/95	ND	10.83	0	97.76	86.93
	7/11/1996	ND	8.98	0	97.76	88.78
	9/11/1996	ND	10.71	0	97.76	87.05
	11/5/1996	ND	10.65	0	97.76	87.11
	7/17/1997	ND	8.75	0	97.76	89.01
	10/9/1997	ND	10.89	0	97.76	86.87
	6/25/1998	ND	8.56	0	97.76	89.20
	8/12/1998	NM	10.68	0	97.76	87.08
	10/22/1998	ND	13.5	0	97.76	84.26
	3/18/1999	ND	8.8	0	97.76	88.96
	6/22/1999	ND	6.44	0	97.76	91.32
	9/16/1999	ND	10.8	0	97.76	86.96
	12/2/1999	ND	9.82	0	97.76	87.94
	3/30/2000	ND	8.39	0	97.76	89.37
	6/14/2000	ND	9.07	0	97.76	88.69
MW-11	9/14/94	12	NA	NA	98.16	NA
	6/30/95	5.54	7.25	1.71	98.16	90.41
	7/11/1996	6.34	10.00	3.66	98.16	88.16
	9/11/1996	3.25	7.20	3.95	98.16	90.96
	11/5/1996	3.05	7.20	4.15	98.16	90.96
	7/17/1997	6.33	9.99	3.66	98.16	88.17
	8/12/1998	NM	3.90	NM	98.16	94.26
	10/22/1998	6.96	8.00	1.04	98.16	90.16
	9/16/1999	Not Measured				

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
MW-11 (Continued)	12/2/1999	6.9	7.37	0.47	98.16	90.79
	3/30/2000	7.33	7.82	0.49	98.16	90.34
	6/14/2000	8.2	10.95	2.75	98.16	87.21
P-1	10/27/1994	ND	17.31	0	101.42	84.11
	6/30/1995	ND	16.72	0	101.42	84.70
	9/21/95	ND	17.4	0	101.42	84.02
	7/11/1996	ND	15.87	0	101.42	85.55
	9/11/1996	ND	16.98	0	101.42	84.44
	11/5/1996	ND	17.06	0	101.42	84.36
	7/17/1997	ND	15.34	0	101.42	86.08
	10/9/1997	ND	17.64	0	101.42	83.78
	6/25/1998	ND	14.53	0	101.42	86.89
	8/12/1998	NM	16.72	0	101.42	84.70
	10/22/1998	ND	15.6	0	101.42	85.82
	3/18/1999	ND	15.65	0	101.42	85.77
	6/22/1999	ND	13	0	101.42	88.42
	9/16/1999	ND	16.84	0	101.42	84.58
	12/2/1999	ND	15.93	0	101.42	85.49
	3/30/2000	ND	15.14	0	101.42	86.28
	6/14/2000	ND	14.49	0	101.42	86.93
P-2	10/27/1994	ND	15.87	0	100.06	84.19
	6/30/1995	ND	15.26	0	100.06	84.80
	9/21/95	ND	16.04	0	100.06	84.02
	7/11/1996	ND	14.52	0	100.06	85.54
	9/11/1996	ND	15.62	0	100.06	84.44
	11/5/1996	ND	15.08	0	100.06	84.98
	7/17/1997	ND	13.92	0	100.06	86.14
	10/9/1997	ND	16.09	0	100.06	83.97
	6/25/1998	ND	15.95	0	100.06	84.11
	8/12/1998	NM	15.3	0	100.06	84.76
	10/22/1998	NM	16.95	0	100.06	83.11
	3/18/1999	NM		0	100.06	86.02 ****
	6/22/1999	ND	11.65	0	100.06	88.41
	9/16/1999	ND	15.46	0	100.06	84.60
	12/2/1999	ND	14.55	0	100.06	85.51
	3/30/2000	ND	13.79	0	100.06	86.27
	6/14/2000	ND	13.13	0	100.06	86.93
River at EW-1	10/27/1994					83.12 *
	6/30/1995					84.03 **
	9/21/95					82.24
	7/11/1996					83.74 ***
	9/11/1996					82.56
	11/5/1996					83.16
	7/17/1997					82.39
	10/9/1997					83.00
	6/25/1998					85.22
	8/12/1998					85.42
	10/22/1998					85.00
	3/18/1999					83.93

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 5 of 6

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
River at EW-1 (Continued)	6/22/1999					83.93
	9/16/1999					78.28
	12/299					78.28
	3/30/2000					84.93
River at EW-2	10/27/1994					84.41
	6/30/1995					85.32
	9/21/95					83.53
	7/11/1996					85.03
	9/11/1996					83.85
	11/5/1996					83.59
	7/17/1997					85.35
	10/9/1997					84.20
	6/25/1998					86.42
	8/12/1998					86.62
	10/22/1998					86.20
	3/18/1999					85.13
	6/22/1999					85.13
	9/16/1999					79.48
	12/2/1999					84.17
	3/30/2000					86.13
River at EW-3	10/27/1994					85.16 *
	6/30/1995					86.07
	9/21/95					84.28
	7/11/1996					85.78 ***
	9/11/1996					84.60
	11/5/1996					84.10
	7/17/1997					86.31
	10/9/1997					85.16
	6/25/1998					85.16
	8/12/1998					85.65
	10/22/1998					85.23
	3/18/1999					86.10
	6/22/1999					89.45
	9/16/1999					85.29
	12/2/1999					85.13
	3/30/2000					87.09
River at EW-4	10/27/1994					86.49 *
	6/30/1995					87.40
	9/21/95					85.61
	7/11/1996					87.11 ***
	9/11/1996					85.93
	11/5/1996					86.44
	7/17/1997					87.27
	10/9/1997					86.12
	6/25/1998					88.34
	8/12/1998					88.54
	10/22/1998					88.12
	3/18/1999					87.05

229607\2ndQtr00.xls - Monitoring Results

Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
River at EW-4 (Continued)	6/22/1999					90.40
	9/16/1999					86.89
	12/2/1999					86.09
	3/30/2000					88.07
TP-1 (2")	6/14/2000	13.24	13.75	0.51	96.06	82.31
TP-1 (4")	6/14/2000	13.7	13.74	0.04	96.66	82.92
TP-2 (4")	6/14/2000	Sheen	13.12	0	96.04	82.92
TP-3 (4")	6/14/2000	Sheen	14.11	0	97.34	83.23
TP-5 (4")	6/14/2000	Sheen	13.57	0	97.83	84.26
TP-6 (4")	6/14/2000	12.39	12.41	0.02	96.66	84.25
TP-7 (4")	6/14/2000	Sheen	11.95	0	96.08	84.13
TP-8 (4")	6/14/2000	ND	14.63	0	97.2	82.57
TP-9 (4")	6/14/2000	ND	15.5	0	97.28	81.78
TP-10 (4")	6/14/2000	Sheen	15.35	0	96.56	81.21
TP-11 (4")	6/14/2000	ND	15.3	0	96.36	81.06
TP-12 (4")	6/14/2000	Sheen	12.49	0	95.9	83.41

Notes:

All measurements in feet.

* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

** River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

*** River elevation was extrapolated from river surface slope, and the wood dock benchmark.

T.O.C. - Top of Casing

ND - Not Detected

NA - Not Available

NM - Not Measured

Test Pit and Monitoring Well Location Map


Exploration Location and Number

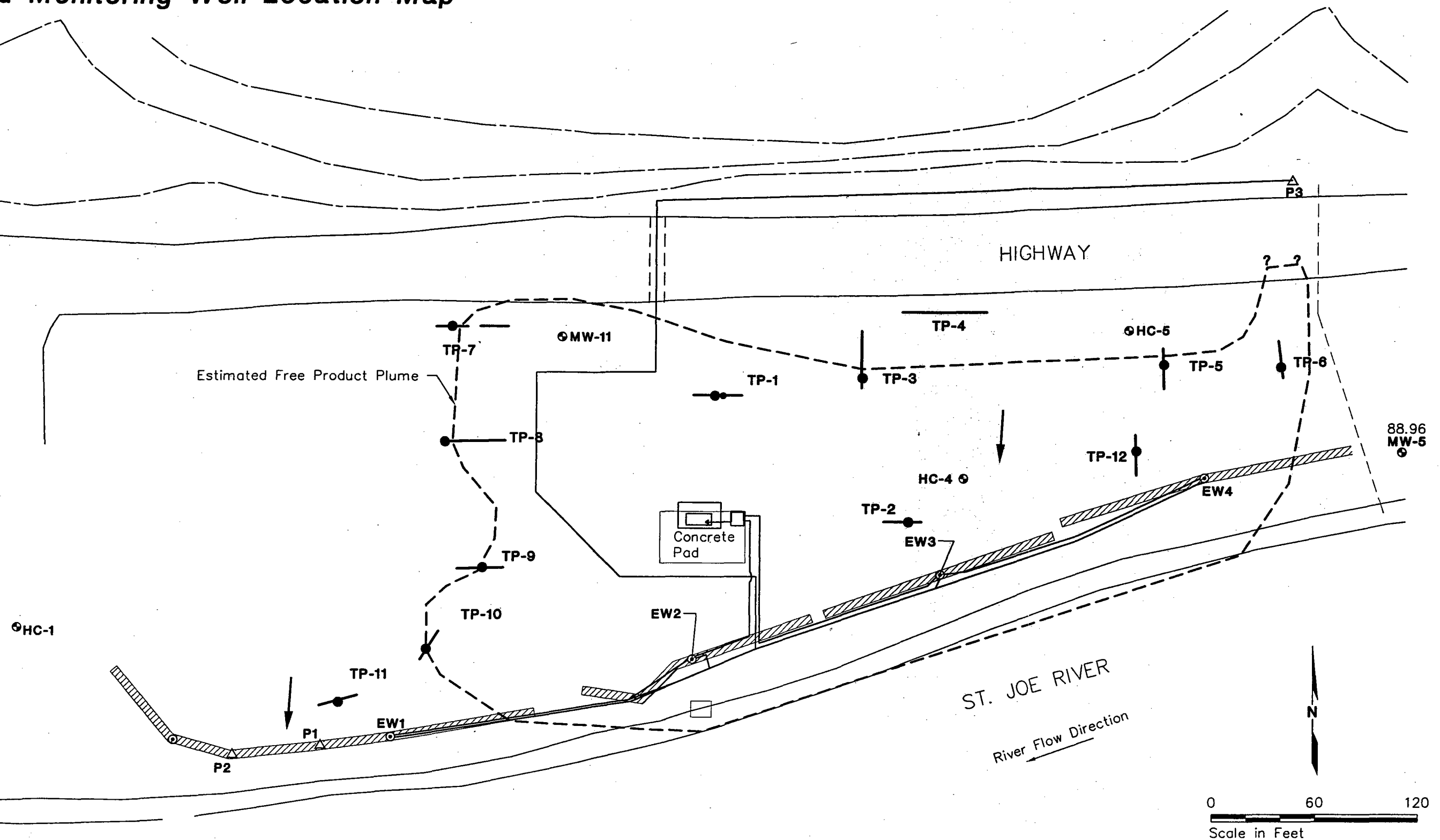
● MW-4 Monitoring Well
 ● EW1 Extraction Well
 △ P1 Piezometer
 ● HC-5 Lost During Construction (1997)

← Approximate Groundwater Flow Direction
 ▨ Existing Extraction Trench

Note: TP-1 has two well casings, 4-inch and 2-inch. Other test pits have 4-inch casings.

— TP-1 Test Pit Location and Number
 ● Monitoring Well Location


HARTCROWSER
 J-2296-07 8/00
 Figure 1



Potlatch

**Potlatch Corporation
Resource Management Group
Idaho Region**

St. Joe Area Woodlands
P.O. Box 386
St. Maries, Idaho 83861-0386
Telephone (208) 245-4146
Fax (208) 245-6421

August 15, 2000

**State of Idaho
Division of Environmental Quality
2110 Ironwood Parkway
Coeur d' Alene, ID 83814-2648**

Attention: Kreg Beck

RE: Corrective Action Plan – Avery Landing Site

Dear Kreg:

In accordance with our Consent Order Modification dated April 20, 2000, Potlatch Corporation submits our Corrective Action Plan for the Avery Landing Site. The Corrective Action Plan was prepared by our Environmental Engineering Consultant, Hart Crowser, Inc., and it is attached for your review and approval.

Your prompt review of our Corrective Action Plan would be appreciated. Our scheduled construction startup date is September 11, 2000.

Kreg, if you have any questions feel free to call me at my St. Maries office.

Sincerely,



**Norm Linton
Area Manager**

**NL:sh
Attachment**

**cc: John Emery
: Greg Rapp
: Larry Bencik
: Greg Rayner – Corps of Engineers
: Greg Weigel – U.S., EPA, Boise
: Rick Donaldson – U.S.F.W.S., Spokane
: Chip Corsi – IDFG, Coeur d' Alene
: Ken Knoblock – ID Dept. of Water Resources**



HARTCROWSER

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August 7, 2000

Anchorage

Mr. Norm Linton
Area Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Chicago

Re: Corrective Action Plan
Avery Landing Site
Avery, Idaho
J-2296-07

Denver

Dear Mr. Linton:

This report presents the Corrective Action Plan for Avery Landing Site in Avery, Idaho. The goal for this action is to stop migration of oil into the St. Joe River. The remedial method to ensure this goal is to excavate the existing shoreline and place an impermeable barrier upgradient of the river to block subsurface migration of free phase hydrocarbons (see Figure 1). Clean cover material would be placed over the impermeable barrier to restore the appearance and function of the shoreline. Figure 5 shows a generalized cross section of the repaired bank. The bottom elevation of the impermeable barrier will be sufficient to prevent migration of free phase hydrocarbons to the river, but not significantly impact the flow of groundwater.

Fairbanks

Jersey City

Juneau

Complete removal of free product in shoreline soil will require excavation below the normal low water elevation of the St. Joe River. A temporary cofferdam (see Figure 2) using retainer blocks will be constructed to keep the St. Joe River from running through the construction area.

Long Beach

To improve fish habitat during the shoreline restoration, four barbs will be constructed as shown on Figure 6. Additionally, the riparian zone above the riprap shoreline will be planted (see Figure 7).

Portland

The following sections describe the work to be completed in detail.

Seattle



SILT CONTROL AND CONTINGENCY SPILL PLAN

During construction of the remedial action, release of silt and petroleum hydrocarbons to the environment will be controlled using retainer blocks, oil absorbent booms, an oil/water separator, and silt fences installed along a drainage ditch.

A retainer block cofferdam will be used to prevent the flow of water from the St. Joe River into the construction area (see Figure 1). Sandbags will be used to seal the retainer block wall and prevent the flow of water between adjacent blocks (see Figure 2). A dewatering pump will be used to remove water from the excavation area during construction. The water removed from the construction area behind the cofferdam will be run through an oil/water separator tank (Figure 3) and then released into a rock ditch with multiple silt fences. The effluent water will then drain back into the St. Joe River. Figure 1 depicts the general site layout and existing rock ditch. The oil/water separator (see Figure 3) will also act as a settling tank to help reduce turbidity in the water. Water quality of the discharge will be monitored visually. If the discharge becomes cloudy or obviously impacted with silt, the construction will be stopped until additional controls are installed and working.

An oil absorbent boom will be placed in the St. Joe River, outside of the retainer block cofferdam, to absorb and contain petroleum hydrocarbons in the event of a release to the river. This is the same procedure currently used at the site to control releases of petroleum products to the river. Additional oil absorbent booms will be available on site in the event of catastrophic failure of the retainer block cofferdam. In the event the cofferdam has to be unattended for more than one day, absorbent booms will be installed inside of the cofferdam to collect any material released from the shoreline.

WALL CONSTRUCTION

Construction of the containment wall will require excavation of about 10 feet horizontally of the existing river bank. Five collection wells will be installed along the wall to remove free product that becomes trapped behind the containment wall. Figure 4 depicts the layout of the containment wall and collection wells. A liner will be placed along the cut-off wall to prevent migration of the free phase petroleum product but allow groundwater to flow beneath the wall to the St. Joe River. Riprap will be placed on the river-side of the cut-off wall to hold the liner in place, and provide suitable fish habitat.



Removal Activities

The existing shoreline will be excavated to provide a stable slope from the top of the bank to 2 feet below the low water mark. In addition, five areas will be excavated into the slope to accommodate 2- to 3-foot-diameter 15-foot-long vertical collection wells. Native vegetation and existing soil will be retained to the extent possible for use in replanting the remediation area. Soil stained by contact with petroleum hydrocarbons will be stockpiled in an upland area of the site. The soils will be spread out in a thin layer to maximize natural attenuation of the contamination.

The construction water behind the cofferdam will be pumped to the oil/water separator to allow for the installation of the liner. Sheens on construction water will be removed using absorbent booms and pads. Every effort will be made to ensure no residual oil is left on the river side of the containment wall.

Liner Installation

A 30-mil oil-resistant PVC alloy liner (Arctic Liner), or equivalent, will be used to prevent migration of petroleum hydrocarbons in the subsurface. The liner will be installed between two layers of 12-ounce non-woven geosynthetic fabric, or equivalent, to prevent puncturing the membrane during installation. A 6-inch bedding layer and a 6-inch cover layer will provide a uniform surface for placing the liner and cover materials. An 18-inch thick layer of crushed rock or clean fill will be placed over the cover layer as a base for the riprap layer. The placement of these materials is depicted on Figure 5.

Riprap Installation

Large, two-man rocks (200 to 500 pounds each) will be placed along the cut-off wall, trailing into the river. The riprap will protect the cut-off wall from erosion and provide aquatic habitat. Once the riprap is installed, the retainer block cofferdam will be removed to restore normal stream flow in the St. Joe River.

Riprap barbs will be installed as shown on Figure 6 to break up the shoreline current and provide additional aquatic habitat. An excavator will place the riprap directly on the riverbed, disturbing the river bottom as little as possible.



RIPARIAN ZONE INSTALLATION

The riparian zone installed above the cut-off wall will be planted with native vegetation to promote a natural appearance for the site. Native shrubs retained during the shoreline excavation will be placed along an 8- to 10-foot-wide strip of flat ground above the riprap wall (see Figure 7). Cottonwood and willow trees will be planted along the wall to provide shade to the river habitat.

LONG-TERM SITE MONITORING

Monitoring in collection wells 1 and 5 (CW-1 and CW-5) will be required to ensure the free product captured by the wall does not build up to a thickness that could migrate around the end of the wall. Assuming a 10-foot smear zone CW-1 and CW-5 would require about 320 gallons of free product oil to fully saturate the 80 feet of soil between the collection well and the end of the wall. Based on a 3-foot-diameter collection well, the total thickness of free product allowed to collect in the well should not exceed 6 feet. Allowing for a long-term build-up of saturated soils and a safety factor of 6, the product in the well should be removed from the collection well whenever it exceeds 1 foot. If a 2-foot-diameter collection well is used, product should still be removed when the thickness exceeds 1 foot to limit the product gradient toward the end of the wall.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Potlatch Corporation for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.



Potlatch Corporation
August 7, 2000

J-2296-07
Page 5

Any questions regarding our work and this letter report, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned.

We trust that this report meets your needs.

Sincerely,

HART CROWSER, INC.

TERRY W. MONTOYA
Project Manager

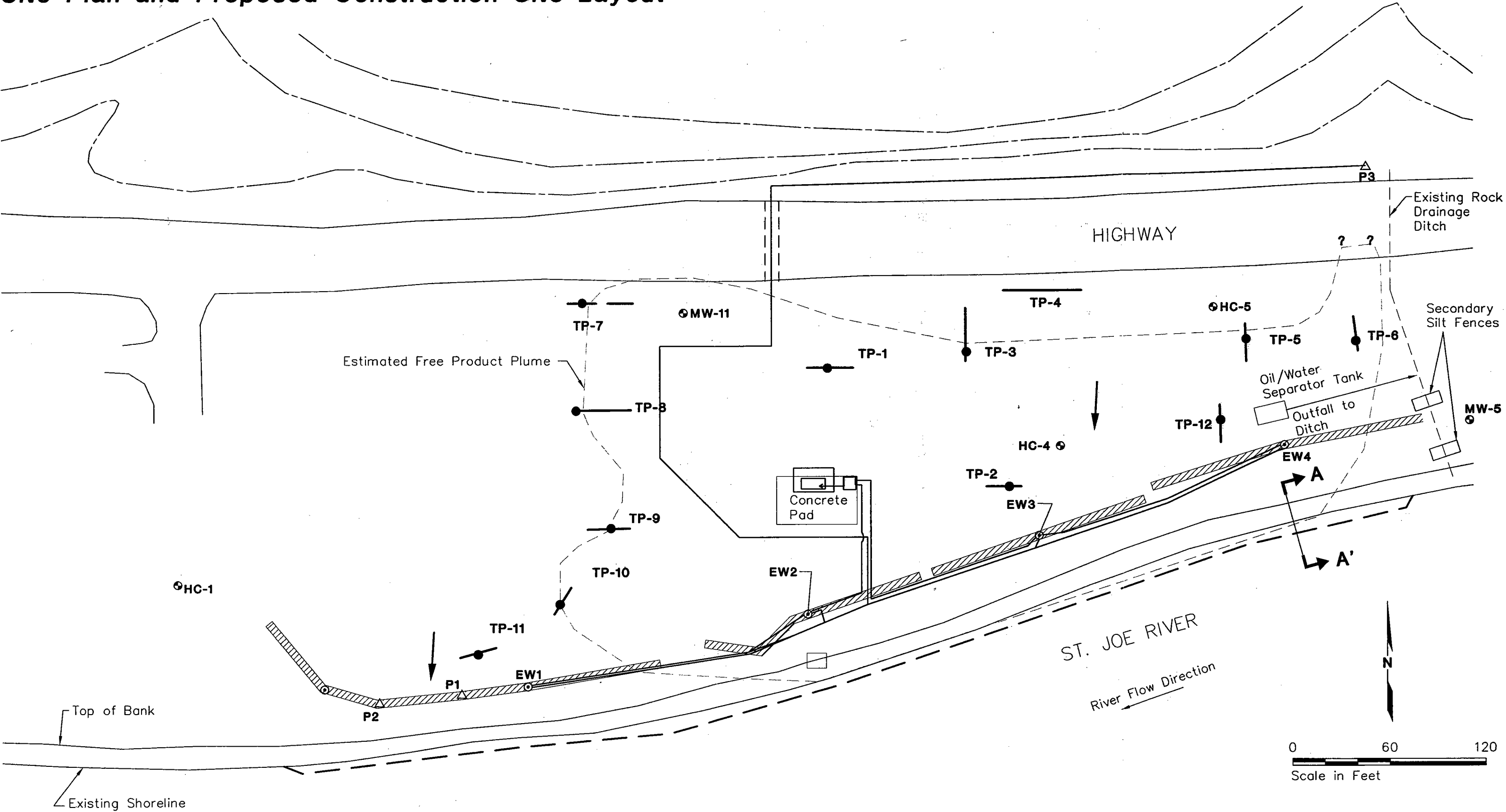
MATTHEW F. SCHULTZ, P.E.
Sr. Associate Chemical Engineer

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Attachments:

- Figure 1 - Site Plan and Proposed Construction Site Layout
- Figure 2 - Retainer Block Cofferdam Detail
- Figure 3 - Oil/Water Separator Detail
- Figure 4 - Proposed Containment Wall Location
- Figure 5 - Containment Wall Detail
- Figure 6 - Barb Detail
- Figure 7 - Riparian Zone and Riprap Wall Area

Site Plan and Proposed Construction Site Layout



Exploration Location and Number

- MW-4 Monitoring Well
- EW1 Extraction Well
- △ P1 Piezometer

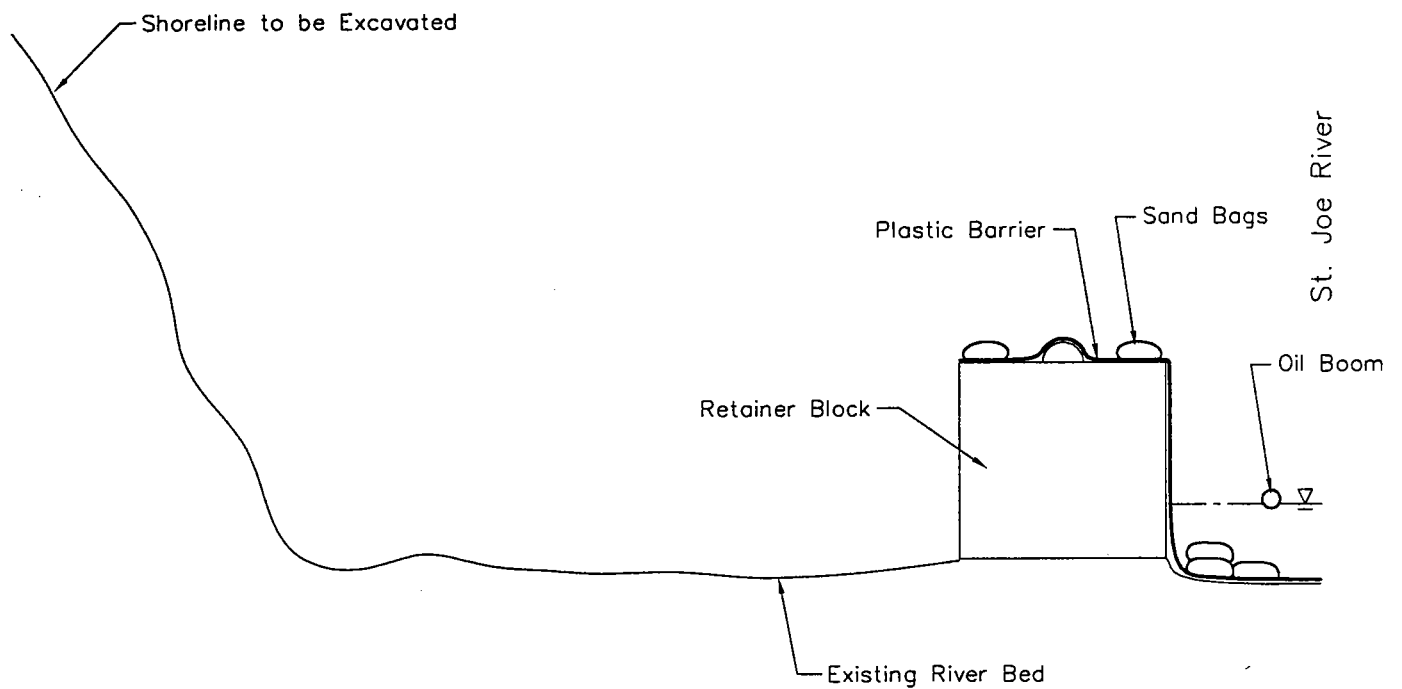
- ← Approximate Groundwater Flow Direction
- Existing Extraction Trench
- Free Product Plume Area
- Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- A, A' Cross Section Location and Designation (See Figure 2)

DTN 7/26/00 1=60 charlie.pc2
22960712

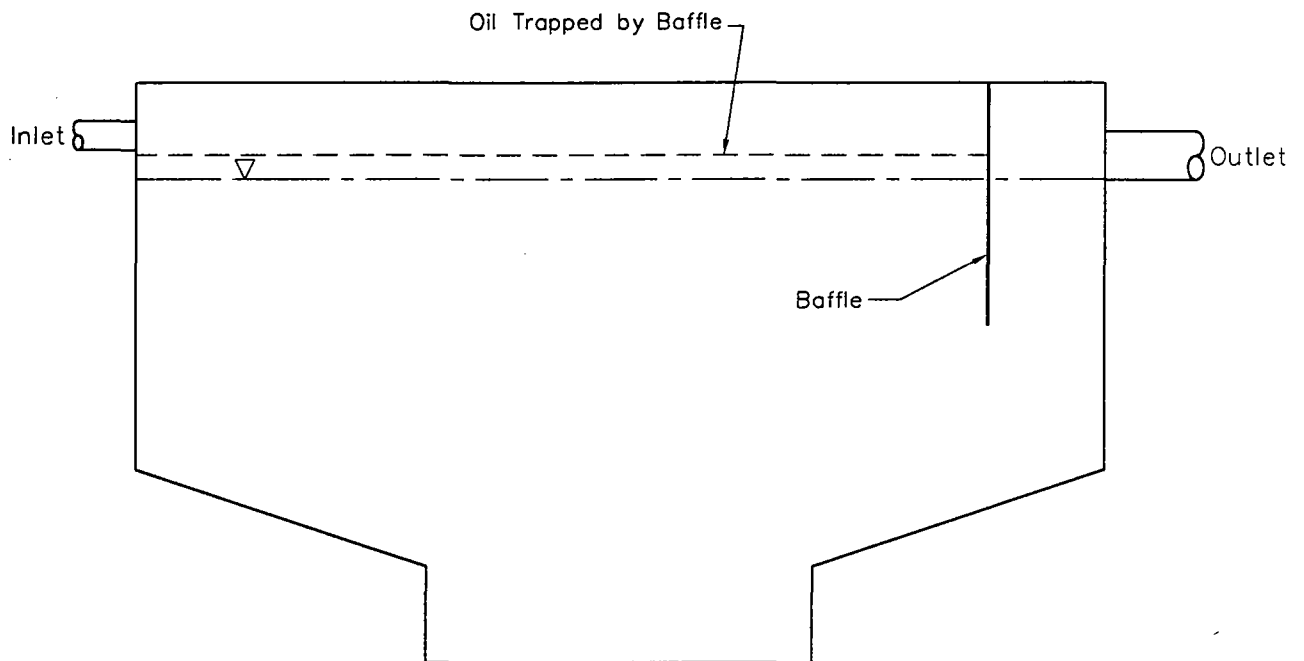
Retainer Block Cofferdam Detail

Cross Section A-A'

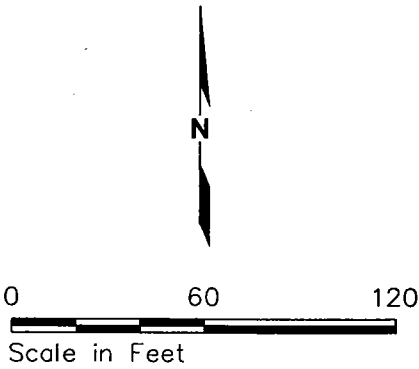
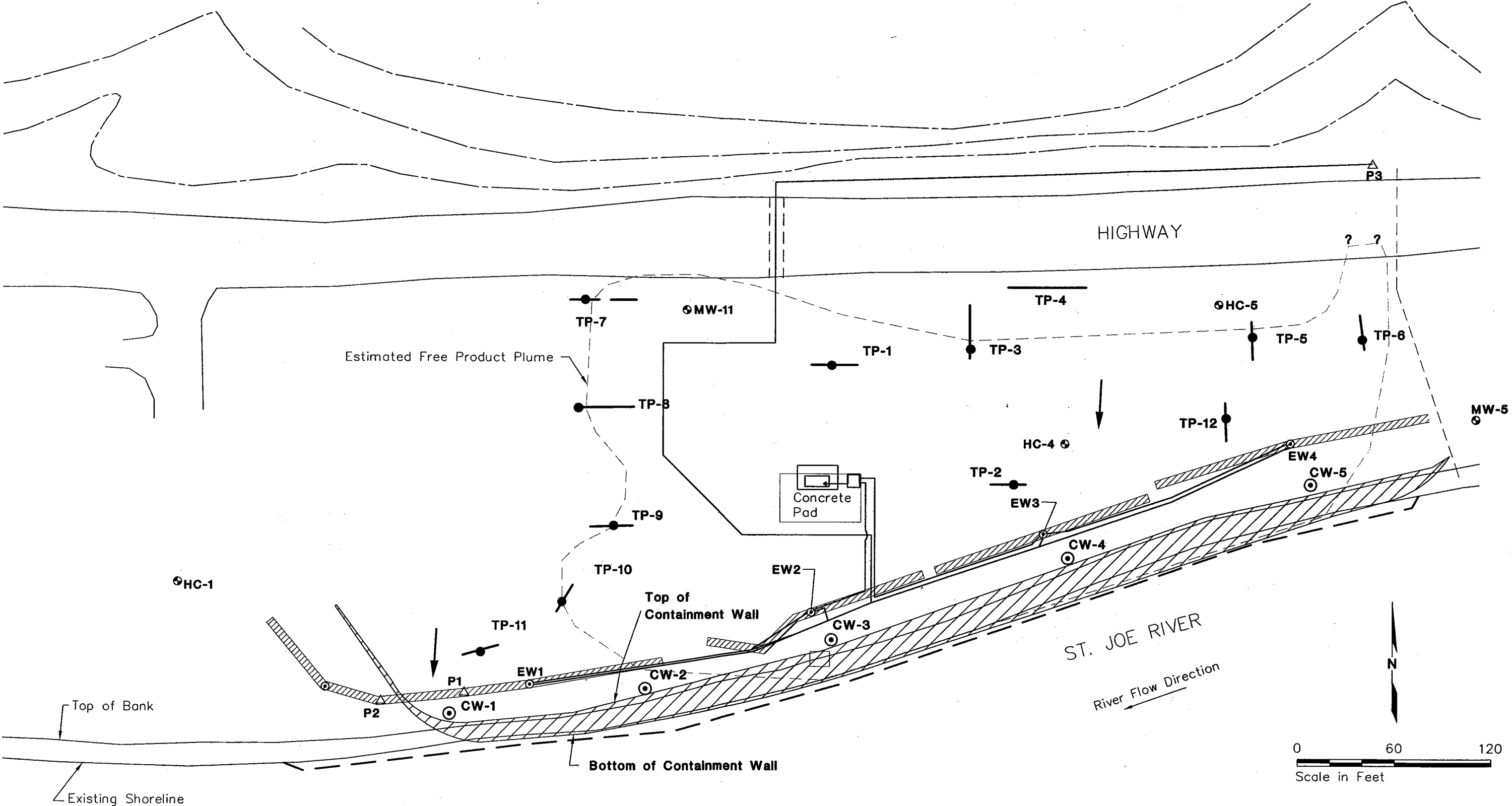


Not to Scale

Oil/Water Separator Detail



Proposed Containment Wall Location



Exploration Location and Number

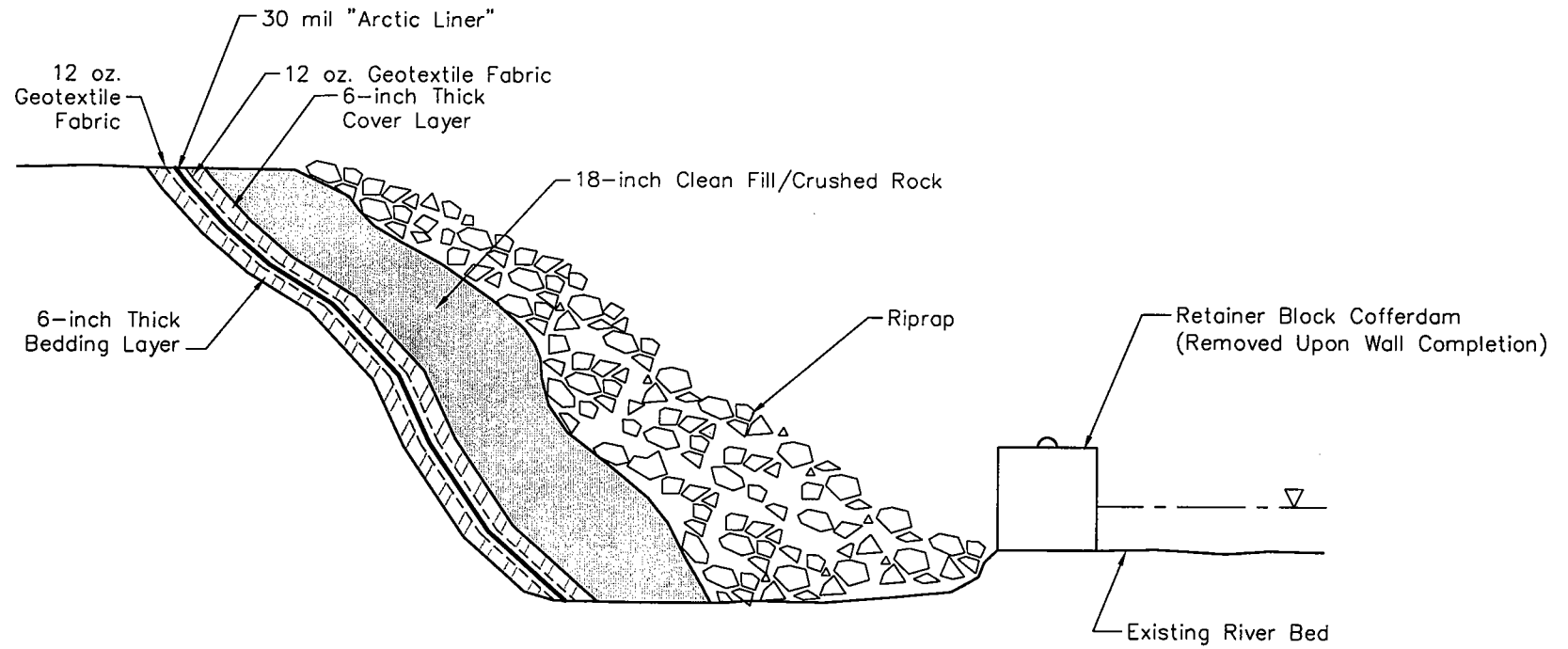
- MW-4 Monitoring Well
- EW1 Extraction Well
- △ P1 Piezometer

- ← Approximate Groundwater Flow Direction
- Existing Extraction Trench
- Free Product Plume Area
- Retainer Block/Sand Bag Cofferdam

- TP-1 Test Pit Location and Number
- TP-1 Test Pit Monitoring Well Location and Number
- CW-1 Collection Well Location and Number
- Proposed Containment Wall

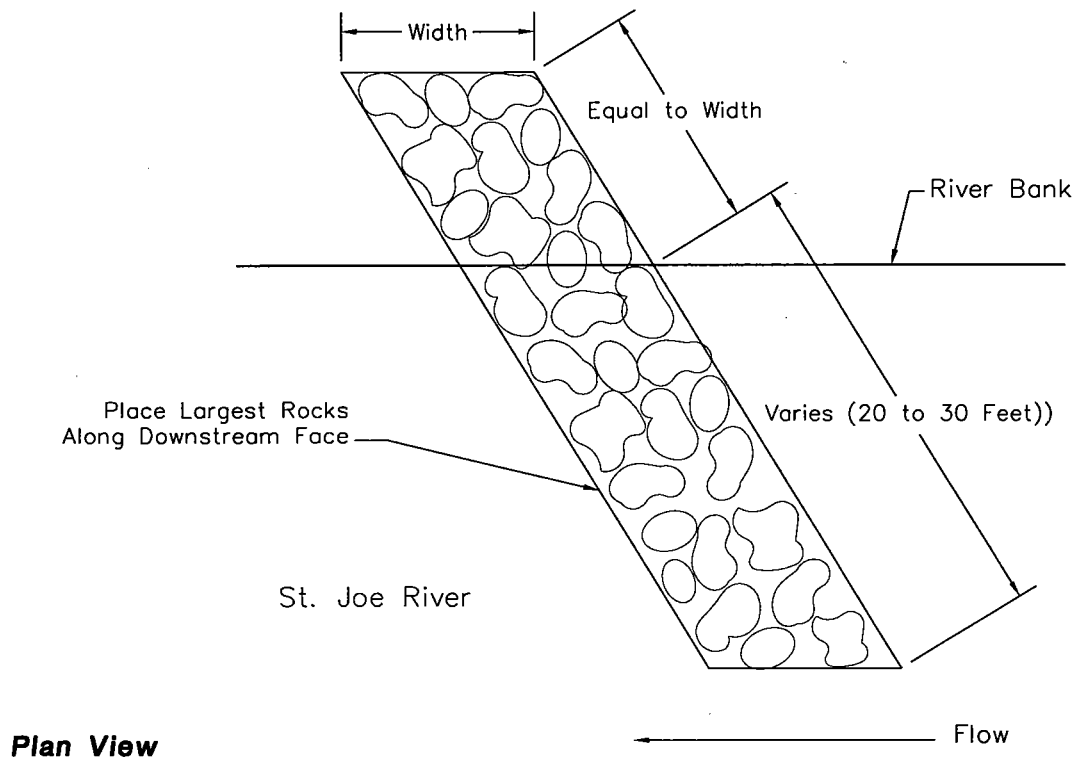
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22960713

Containment Wall Detail

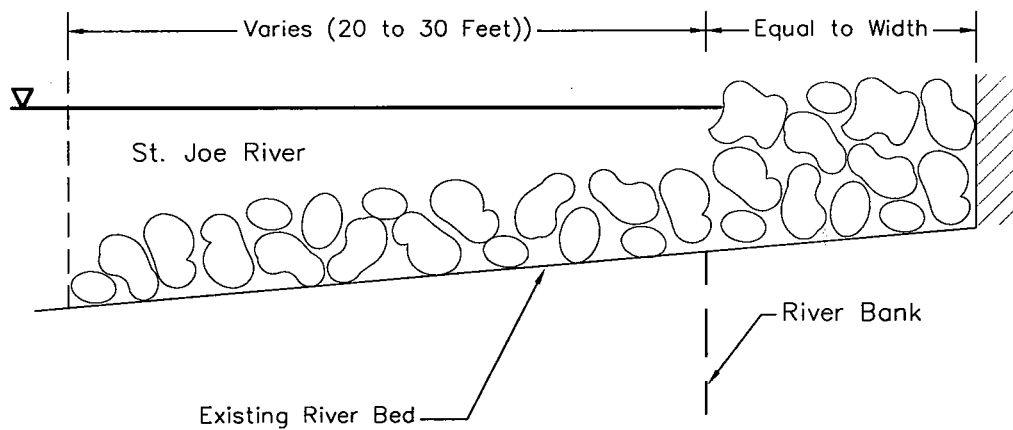


Not to Scale

Barb Detail

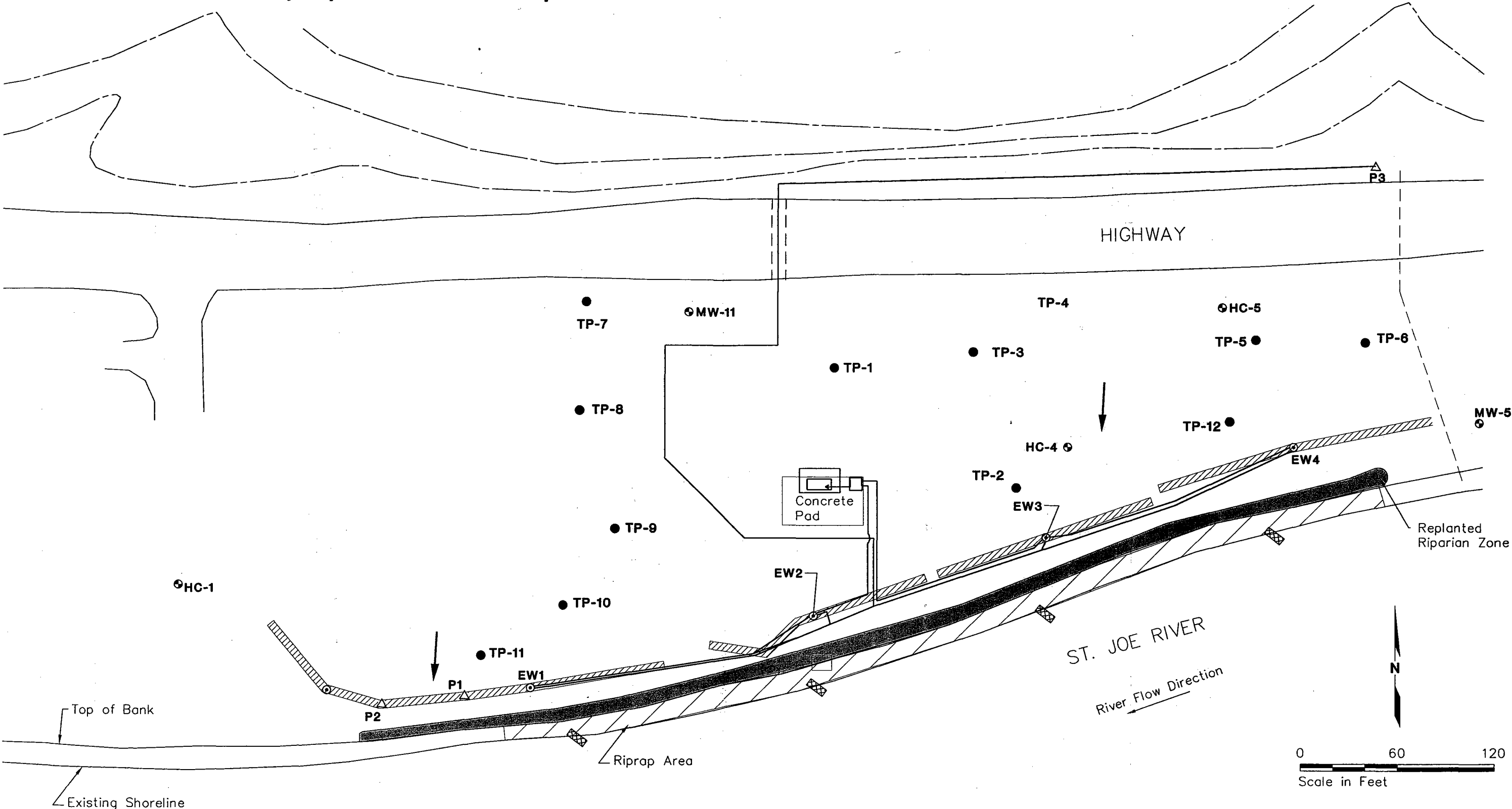


Plan View



Cross Section

Riparian Zone and Riprap Wall Area Map



Exploration Location and Number

- MW-4 Monitoring Well
- EW1 Extraction Well
- △ P1 Piezometer



Approximate Groundwater Flow Direction



Existing Extraction Trench



Area of Riparian Zone to be Replanted

- TP-1 Test Pit/Monitoring Well Location and Number
- ▣ Riprap Barb Location



HARTCROWSER

J-2296-07 7/00
Figure 7

Anchorage
2550 Denali Street, Suite 705
Anchorage, Alaska 99503-2737
Fax 907-276-2104
Tel 907-276-7475

Boston
100 Edmundo Center, Suite 331G
Beverly, Massachusetts 01915-6123
Fax 978-921-8164
Tel 978-921-8163

Chicago
626 North Western Avenue
Lake Forest, Illinois 60045-1921
Fax 847-295-3033
Tel 847-295-0077

Denver
274 Union Boulevard, Suite 200
Lakewood, Colorado 80228-1835
Fax 303-987-8907
Tel 303-986-6950

Eureka
317 Fortuna Boulevard
Fortuna, California 95540
Fax 707-726-9146
Tel 707-726-9145

Fairbanks
1896 Marika Street, Unit 1
Fairbanks, Alaska 99709-5545
Fax 907-451-6056
Tel 907-451-4496

Jersey City
75 Montgomery Street, Fifth Floor
Jersey City, New Jersey 07302-3726
Fax 201-985-8182
Tel 201-985-8100

Juneau
319 Seward Street, Suite 1
Juneau, Alaska 99801-1173
Fax 907-586-1071
Tel 907-586-6534

Long Beach
One World Trade Center, Suite 2460
Long Beach, California 90831-2460
Fax 562-495-6361
Tel 562-495-6360

Portland
Five Centerpointe Drive, Suite 240
Lake Oswego, Oregon 97035-8652
Fax 503-620-6918
Tel 503-620-7284

Seattle
1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206-328-5581
Tel 206-324-9530



HARTCROWSER

Delivering smarter solutions

www.hartcrowser.com

September 5, 2000

Anchorage

Mr. Norm Linton
Area Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

Chicago

Re: Addendum No. 1 for Corrective Action Plan
Avery Landing Site
Avery, Idaho
J-2296-07

Denver

Dear Mr. Linton:

This report presents the information requested by Idaho Department of Environmental Quality (IDEQ), Fish and Wildlife, and Idaho Corps of Engineers after reviewing the Corrective Action Plan for Avery Landing Site in Avery, Idaho.

Fairbanks

General Clarifications

Jersey City

The expected duration of the project is 3 to 4 weeks. Work completed in the river is expected to last 2 to 3 weeks.

There will be four types of wells on site following the planned construction: 2-inch-diameter monitoring wells; 4-inch-diameter monitoring wells; 12-inch-diameter extraction wells; and 24 to 36-inch-diameter collection wells.

Juneau

When construction begins, the current water extraction system will be turned off to allow the use of the reinjection trench. The water extraction system will remain off after the containment wall is completed. Oil skimmer pumps will be left in place and used as needed to remove product in the extraction well.

Long Beach

Portland

Seattle



SILT CONTROL AND CONTINGENCY SPILL PLAN

Clarification on Plastic Material to be Used on the Cofferdam

The plastic to be used to help seal the cofferdam will consist of 6-mil or greater reinforced polyethylene plastic, or 30-mil "Arctic Liner" PVC alloy material.

Clarification on Treatment of Dewatering Water

Water generated during dewatering activities will be run through an oil/water separator. The water will then be pumped to existing treatment system reinjection trench located across the road. Should the dewatering pumping rate be too great for complete reintroduction, a slipstream will be diverted through a rock ditch back to the river. This slipstream will have to meet a turbidity level of 25 NTU above background due to duration of the work (greater than 10 days). Should the slipstream be required, it will be monitored using a field turbidity meter. If the turbidity exceeds 20 NTU above background, work will be halted and other institutional controls implemented to ensure no water is discharge above the criteria.

WALL CONSTRUCTION

Clarification on the Locations of Additional Collection Wells

In addition to the five collection wells along the containment wall, collection wells will be installed in areas where the 4-inch-diameter monitoring wells that contain a depth of product more than 6 inches. At a minimum one collection well will be installed in the area of MW-11, where extremely thick product has historically been found.

LINER INSTALLATION

Clarification on Bedding Material

Bedding material to be placed above and below the geo-fabric and plastic liner will be fines, 3/4-inch minus, derived from screening the local soil.



RIPARIAN ZONE INSTALLATION

Clarification on Tree Root Migration

Tree roots will not penetrate a non-permeable layer. The root has to sense a water source for it to grow in a direction. Since the plastic liner that will be installed is non-permeable, root penetrations will not occur.

Clarification of Tree Type, Spacing, and Performance Criteria

Cottonwood trees will be planted on 10-foot centers with willow trees approximately every fifth tree. Though the organization of the trees to allow clustering may change the order of the trees, the ratio and number of trees will be consistent. A minimum of 14 willow and 56 cottonwood trees will be planted. In addition the shrubs recovered during removal activities will be planted among the trees. The riparian zone will be monitored to ensure at least an 80 percent survival rate after 3 years.

LONG-TERM SITE MONITORING

Clarification of Monitoring Locations, Frequency, and Action Levels

Monitoring for the first year will be completed monthly in all existing monitoring, extraction, and collection wells on the site. The data will be tabulated and presented in the yearly report that will recommend follow-on site monitoring. Potlatch is required to notify IDEQ and remove product from the wells when the product depth exceeds 6 inches in any collection well.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Potlatch Corporation for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

Any questions regarding our work and this response letter, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned.



Potlatch Corporation
September 5, 2000

J-2296-07
Page 4

We trust that this report meets your needs.

Sincerely,

HART CROWSER, INC.



TERRY W. MONTOYA
Project Manager



MATTHEW F. SCHULTZ, P.E.
Sr. Associate Chemical Engineer



HARTCROWSER

Delivering smarter solutions

www.hartcrowser.com

December 15, 2000

Anchorage

Mr. Norm Linton
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Boston

**Re: Remediation System Installation and Third Quarter 2000 Performance Report
Avery Landing Recovery System
J-2296-07**

Chicago

Dear Mr. Linton:

Denver

Hart Crowser is pleased to present the Remediation System Installation and Third Quarter 2000 Performance Report for the Avery Landing free product recovery system. This letter report presents a summary of our remediation system installation during September 2000, and third quarter groundwater elevations and product thickness measurements.

Fairbanks

REMEDIATION SYSTEM INSTALLATION

Jersey City

The containment wall and six product collection wells were installed in September and October 2000. Slotted monitoring well casings were installed in the collection wells for free product and groundwater elevation measurement, as well as free product recovery. Figure 1 depicts the location of the containment wall and collection wells. Test pit wells installed during the site characterization are also depicted on Figure 1.

Juneau

GROUNDWATER AND PRODUCT QUARTERLY MONITORING

Long Beach

Twelve test pit wells (TP-1 through TP-12), two monitoring wells (HC-4 and HC-5), and five collection wells (CW-1 through CW-5) were monitored on September 21, 2000, prior to the installation of the containment wall. Well, piezometer, and test pit locations are shown on Figure 1. At each monitoring location, depth to product and depth to groundwater measurements were performed using a Solinst, a free-product measuring device. River elevations were not measured because of the presence of the temporary cofferdam placed for the containment wall installation.

Portland

Seattle



Potlatch Corporation
December 15, 2000

J-2296-07
Page 2

The extraction well operation will no longer be monitored on a quarterly basis. Instead, the system will be evaluated based on free-product measurements across the site and the amount of free product removed from the collection wells.

FREE PRODUCT RECOVERY

The approximate total product removed by the previous system is 775 gallons. The first measurement for product contained by the containment wall system will be performed during the monitoring event in December. Potlatch will continue to monitor product depth in wells on-site on a monthly basis. If any of the collection wells have a product depth of 6 inches or more IDEQ will be notified and arrangements for removal will be completed.

PROJECT SCHEDULE

In November 2001, Potlatch will provide a report documenting monthly product measurements for the year. Additionally Potlatch will provide a proposed schedule for long-term monitoring and free-product removal activities.

LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.



Potlatch Corporation
December 15, 2000

J-2296-07
Page 3

If additional information or clarification is required, please call Terry Montoya at (206) 324-9530.

Sincerely,

HART CROWSER, INC.

DALLAS HOOVER
Senior Staff Remediation Engineer

TERRY MONTOYA
Associate Remediation Engineer

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Attachments:

Table 1 - Avery Landing Groundwater and River Monitoring Data

Figure 1 - Avery Landing Third Quarter 2000 Groundwater Flow Direction Map

cc: Kreg Beck, Idaho Department of Environmental Quality

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 1 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
EW-1	10/27/1994	ND	11	0	95.34	84.34
	6/30/1995	ND	10.9	0	95.34	84.44
	9/21/95	11.25	11.27	0.02	95.34	84.07
	7/11/1996	ND	9.74	0	95.34	85.60
	9/11/1996	ND	10.88	0	95.34	84.46
	11/5/1996	ND	11.94	0	95.34	83.40
	7/17/1997	ND	10.38	0	95.34	84.96
	10/9/1997	ND	13.17	0	95.34	82.17
	6/25/1998	ND	10.01	0	95.34	85.33
	8/12/1998	NM	10.52	0	95.34	84.82
	10/22/1998	Sheen	10.86	0	95.34	84.48
	3/18/1999			0	95.34	85.57
	6/22/1999	ND	11.68	0	95.34	83.66
	9/16/1999	ND	10.72	0	95.34	84.62
	12/2/1999	ND	9.78	0	95.34	85.56
	3/30/2000	ND	9.03	0	95.34	86.31
	9/21/2000	ND	10.86	0	95.34	84.48
EW-2	10/27/1994	ND	10.37	0	95.24	84.87
	6/30/1995	10.57	10.89	0.32	95.24	84.35
	9/21/95	13.9	13.92	0.02	95.24	81.32
	7/11/1996	11.03	11.66	0.63	95.24	83.58
	9/11/1996	Sheen	14.00	0	95.24	81.24
	11/5/1996	Sheen	12.27	0	95.24	82.97
	7/17/1997	8.99	9.09	0.1	95.24	86.15
	10/9/1997	Sheen	15.44	0	95.24	79.80
	6/25/1998	9.19	9.64	0.45	95.24	85.60
	8/12/1998	NM	9.99	0	95.24	85.25
	10/22/1998	Sheen	10.94	0	95.24	84.30
	3/18/1999	10.17	10.27	0.1	95.24	84.97
	6/22/1999	11.3	11.31	0.01	95.24	83.93
	9/16/1999	15.32	15.35	0.03	95.24	79.89
	12/2/1999	9.91	10.1	0.19	95.24	85.14
	3/30/2000	9.5	10.29	0.79	95.24	84.95
	6/14/2000	8.89	9.39	0.5	95.24	85.85
	9/21/2000	ND	10.54	0	95.24	84.70
EW-3	10/27/1994	ND	10.05	0	95.78	85.73
	6/30/1995	9.35	9.8	0.45	95.78	85.98
	9/21/95	10.92	11.08+	0.16	95.78	84.70
	7/11/1996	8.53	8.64	0.11	95.78	87.14
	9/11/1996	10.75	11.70	0.95	95.78	84.08
	11/5/1996	Sheen	11.8	0	95.78	83.98
	7/17/1997	9.13	9.33	0.2	95.78	86.45
	10/9/1997	10.9	11.68	0.78	95.78	84.10

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
	6/25/1998	8.78	9.43	0.65	95.78	86.35
	8/12/1998	ND	11	0	95.78	84.78
	10/22/1998	12.58	13.38	0.8	95.78	82.40
	3/18/1999	9.03	9.23	0.2	95.78	86.55
	6/22/1999	11.1	11.25	0.15	95.78	84.53
	9/16/1999	10.76	11.06	0.3	95.78	84.72
	12/2/1999	9.04	9.1	0.06	95.78	86.68
	3/30/2000	ND	9.08	0	95.78	86.70
	6/14/2000	ND	7.68	0	95.78	88.10
	9/21/2000	10.58	10.88	0.3	95.78	84.90
EW-4	10/27/1994	ND	8.05	0	94.32	86.27
	6/30/1995	7.84	7.85	0.01	94.32	86.47
	9/21/95	8.22	8.24	0.02	94.32	86.08
	7/11/1996	Sheen	6.44	0	94.32	87.88
	11/5/1996	Sheen	8.08	0	94.32	86.24
	7/17/1997	Sheen	5.43	0	94.32	88.89
	10/9/1997	Sheen	7.11	0	94.32	87.21
	6/25/1998	5.28	5.3	0.02	94.32	89.02
	8/12/1998	NM	8.98	0	94.32	85.34
	10/22/1998	ND	8.98	0	94.32	85.34
	3/18/1999	5.18	5.26	0	94.32	89.06
	6/22/1999	Sheen	9	0	94.32	85.32
	9/16/1999	8.45	9.27	0.82	94.32	85.05
	12/2/1999	7.31	7.36	0.05	94.32	86.96
	3/30/2000	Sheen	6.5	0	94.32	87.82
	6/14/2000	ND	4.69	0	94.32	89.63
	9/21/2000	7.98	8.88	0.9	94.32	85.44
HC-1	10/27/1994	ND	13.25	0	97.50	84.25
	6/30/1995	ND	12.00	0	97.50	85.50
	9/21/95	NM	13.42	0	97.50	84.08
	7/11/1996	ND	11.92	0	97.50	85.58
	9/11/1996	ND	12.90	0	97.50	84.60
	11/5/1996	Could not locate due to snow				
	7/17/1997	ND	11.27	0	97.50	86.23
	10/9/1997	ND	12.87	0	97.50	84.63
	6/25/1998	ND	11.85	0	97.50	85.65
	8/12/1998	NM	12.97	0	97.50	84.53
	10/22/1998	ND	13.1	0	97.50	84.40
	3/18/1999	ND	11.7	0	97.50	85.80
	6/22/1999	ND	9.28	0	97.50	88.22
	9/16/1999	ND	12.98	0	97.50	84.52
	12/2/1999	Well Under Standing Water				
	3/30/2000	ND	11.24	0	97.50	86.26
	6/14/2000	ND	10.73	0	97.50	86.77
	9/21/2000	ND	13.05	0	97.50	84.45

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 3 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
HC-4	10/27/1994	13.3	15.34	2.04	98.94	83.60
	6/30/1995	11.89	15.49	3.6	98.94	83.45
	9/21/95	13.67	NM	NM	98.94	85.27
	7/11/1996	11.58	12.93	1.35	98.94	86.01
	9/11/1996	13.53	13.93	0.40	98.94	85.01
	11/5/1996	11.82	13.62	1.80	98.94	85.32
	7/17/1997	11.65	13.25	1.60	98.94	85.69
	10/9/1997	12.67	14.92	2.25	98.94	84.02
	6/25/1998	11.53	12.49	0.96	98.94	86.45
	8/12/1998	NM	13.9	NM	98.94	85.04
	10/22/1998	10.3	14.7	4.40	98.94	84.24
	3/18/1999	10.5	14.05	4.45	98.94	84.89
	6/22/1999	16.9	13.9	4.00	98.94	85.04
	9/16/1999	15.89	17.57	1.68	98.94	81.37
	12/2/1999	Not Measured				
	3/30/2000	10.68	11.70	1.02	98.94	87.24
	6/14/2000	10.41	10.92	0.51	98.94	88.02
	9/21/2000	13	13.4	0.4	98.94	85.54
HC-5	11/5/1996	ND	11.22	0	97.95	86.73
	7/17/1997	Monument under standing water				
	10/9/1997	Monument under standing water				
	6/25/1998	Lost during road construction				
	6/14/2000	ND	7.71	0	97.95	90.24
	9/21/2000	ND	17.95	0	104.66	86.71
MW-4	9/14/94	ND	12.88	0	99.76	86.88
	6/30/95	ND	10.19	0	99.76	89.57
	9/21/95	ND	11.95	0	99.76	87.81
	7/11/1996	Sheen	10.18	0	99.76	89.58
	9/11/1996	Sheen	11.33	0	99.76	88.43
	11/5/1996	Lost during road construction				
MW-5	10/27/1994	ND	10.45	0	97.76	87.31
	6/30/1995	ND	9.13	0	97.76	88.63
	9/21/95	ND	10.83	0	97.76	86.93
	7/11/1996	ND	8.98	0	97.76	88.78
	9/11/1996	ND	10.71	0	97.76	87.05
	11/5/1996	ND	10.65	0	97.76	87.11
	7/17/1997	ND	8.75	0	97.76	89.01
	10/9/1997	ND	10.89	0	97.76	86.87
	6/25/1998	ND	8.56	0	97.76	89.20
	8/12/1998	NM	10.68	0	97.76	87.08
	10/22/1998	ND	13.5	0	97.76	84.26
	3/18/1999	ND	8.8	0	97.76	88.96
	6/22/1999	ND	6.44	0	97.76	91.32

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
	9/16/1999	ND	10.8	0	97.76	86.96
	12/2/1999	ND	9.82	0	97.76	87.94
	3/30/2000	ND	8.39	0	97.76	89.37
	6/14/2000	ND	9.07	0	97.76	88.69
	9/21/2000	ND	10.65	0	97.76	87.11
MW-11	9/14/94	12	NA	NA	98.16	NA
	6/30/95	5.54	7.25	1.71	98.16	90.41
	7/11/1996	6.34	10.00	3.66	98.16	88.16
	9/11/1996	3.25	7.20	3.95	98.16	90.96
	11/5/1996	3.05	7.20	4.15	98.16	90.96
	7/17/1997	6.33	9.99	3.66	98.16	88.17
	8/12/1998	NM	3.90	NM	98.16	94.26
	10/22/1998	6.96	8.00	1.04	98.16	90.16
	9/16/1999	Not Measured				
	12/2/1999	6.9	7.37	0.47	98.16	90.79
	3/30/2000	7.33	7.82	0.49	98.16	90.34
	6/14/2000	8.2	10.95	2.75	98.16	87.21
P-1	10/27/1994	ND	17.31	0	101.42	84.11
	6/30/1995	ND	16.72	0	101.42	84.70
	9/21/95	ND	17.4	0	101.42	84.02
	7/11/1996	ND	15.87	0	101.42	85.55
	9/11/1996	ND	16.98	0	101.42	84.44
	11/5/1996	ND	17.06	0	101.42	84.36
	7/17/1997	ND	15.34	0	101.42	86.08
	10/9/1997	ND	17.64	0	101.42	83.78
	6/25/1998	ND	14.53	0	101.42	86.89
	8/12/1998	NM	16.72	0	101.42	84.70
	10/22/1998	ND	15.6	0	101.42	85.82
	3/18/1999	ND	15.65	0	101.42	85.77
	6/22/1999	ND	13	0	101.42	88.42
	9/16/1999	ND	16.84	0	101.42	84.58
	12/2/1999	ND	15.93	0	101.42	85.49
	3/30/2000	ND	15.14	0	101.42	86.28
	6/14/2000	ND	14.49	0	101.42	86.93
	9/21/2000	Piezometer removed during construction of new containment wall				
P-2	10/27/1994	ND	15.87	0	100.06	84.19
	6/30/1995	ND	15.26	0	100.06	84.80
	9/21/95	ND	16.04	0	100.06	84.02
	7/11/1996	ND	14.52	0	100.06	85.54
	9/11/1996	ND	15.62	0	100.06	84.44
	11/5/1996	ND	15.08	0	100.06	84.98
	7/17/1997	ND	13.92	0	100.06	86.14
	10/9/1997	ND	16.09	0	100.06	83.97
	6/25/1998	ND	15.95	0	100.06	84.11

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
	8/12/1998	NM	15.3	0	100.06	84.76
	10/22/1998	NM	16.95	0	100.06	83.11
	3/18/1999	NM		0	100.06	86.02 ****
	6/22/1999	ND	11.65	0	100.06	88.41
	9/16/1999	ND	15.46	0	100.06	84.60
	12/2/1999	ND	14.55	0	100.06	85.51
	3/30/2000	ND	13.79	0	100.06	86.27
	6/14/2000	ND	13.13	0	100.06	86.93
	9/21/2000	Piezometer removed during construction of new containment wall.				
River at EW-1	10/27/1994					83.12 *
	6/30/1995					84.03 **
	9/21/95					82.24
	7/11/1996					83.74 ***
	9/11/1996					82.56
	11/5/1996					83.16
	7/17/1997					82.39
	10/9/1997					83.00
	6/25/1998					85.22
	8/12/1998					85.42
	10/22/1998					85.00
	3/18/1999					83.93
	6/22/1999					83.93
	9/16/1999					78.28
	12/299					78.28
	3/30/2000					84.93
River at EW-2	10/27/1994					84.41
	6/30/1995					85.32
	9/21/95					83.53
	7/11/1996					85.03
	9/11/1996					83.85
	11/5/1996					83.59
	7/17/1997					85.35
	10/9/1997					84.20
	6/25/1998					86.42
	8/12/1998					86.62
	10/22/1998					86.20
	3/18/1999					85.13
	6/22/1999					85.13
	9/16/1999					79.48
	12/2/1999					84.17
	3/30/2000					86.13
River at EW-3	10/27/1994					85.16 *
	6/30/1995					86.07
	9/21/95					84.28
	7/11/1996					85.78 ***

Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 6 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
	9/11/1996					84.60
	11/5/1996					84.10
	7/17/1997					86.31
	10/9/1997					85.16
	6/25/1998					85.16
	8/12/1998					85.65
	10/22/1998					85.23
	3/18/1999					86.10
	6/22/1999					89.45
	9/16/1999					85.29
	12/2/1999					85.13
	3/30/2000					87.09
River at EW-4	10/27/1994					86.49 *
	6/30/1995					87.40
	9/21/95					85.61
	7/11/1996					87.11 ***
	9/11/1996					85.93
	11/5/1996					86.44
	7/17/1997					87.27
	10/9/1997					86.12
	6/25/1998					88.34
	8/12/1998					88.54
	10/22/1998					88.12
	3/18/1999					87.05
	6/22/1999					90.40
	9/16/1999					86.89
	12/2/1999					86.09
	3/30/2000					88.07
TP-1 (2")	6/14/2000	13.24	13.75	0.51	103.65	89.90
	9/21/2000	18.81	19.45	0.64	103.65	84.20
TP-1 (4')	6/14/2000	13.7	13.74	0.04	104.25	90.51
	9/21/2000	ND	18.39	0	104.25	85.86
TP-2	6/14/2000	Sheen	13.12	0	96.04	82.92
	9/21/2000	ND	DRY	0	96.04	
TP-3	6/14/2000	Sheen	14.11	0	97.34	83.23
	9/21/2000	ND	DRY	0	97.34	
TP-5	6/14/2000	Sheen	13.57	0	97.83	84.26
	9/21/2000	ND	11.73	0	97.83	86.59
TP-6	6/14/2000	12.39	12.41	0.02	96.66	84.25
	9/21/2000	ND	9.84	0	96.66	86.82

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Table 1 - Avery Landing Groundwater and River Monitoring Data

Sheet 7 of 7

Monitoring Location	Date	Depth to Product	Depth to Water	Product Thickness	T.O.C. Elevation	Groundwater Elevation
TP-7	6/14/2000	Sheen	11.95	0	96.08	84.13
	9/21/2000	ND	10.3	0	96.08	85.78
TP-8	6/14/2000	ND	14.63	0	97.2	82.57
	9/21/2000	ND	DRY	0	97.2	
TP-9	6/14/2000	ND	15.5	0	97.28	81.78
	9/21/2000	ND	DRY	0	97.28	
TP-10	6/14/2000	Sheen	15.35	0	96.56	81.21
	9/21/2000	ND	11.09	0	96.56	85.47
TP-11	6/14/2000	ND	15.3	0	96.36	81.06
	9/21/2000	ND	10.84	0	96.36	85.52
TP-12	6/14/2000	Sheen	12.49	0	95.9	83.41
	9/21/2000	ND	10.12	0	95.9	85.78
CW-1	9/21/2000	ND	14.44	0	TOC modified	
CW-2	9/21/2000	ND	15.11	0	TOC modified	
CW-3	9/21/2000	ND	13.15	0	TOC modified	
CW-4	9/21/2000	ND	12.1	0	TOC modified	
CW-5	9/21/2000	ND	12.71	0	TOC modified	
CW-6	9/21/2000	Not Installed at time of measurement				

Notes:

All measurements in feet.

* River elevation was extrapolated from the river surface slope measured in 1995 and the river elevation measured south of EW-2 in 1994.

** River elevation was extrapolated from river surface slope, based on river elevations measured south of EW-2, EW-3, and EW-4 in 1995.

*** River elevation was extrapolated from river surface slope, and the wood dock benchmark.

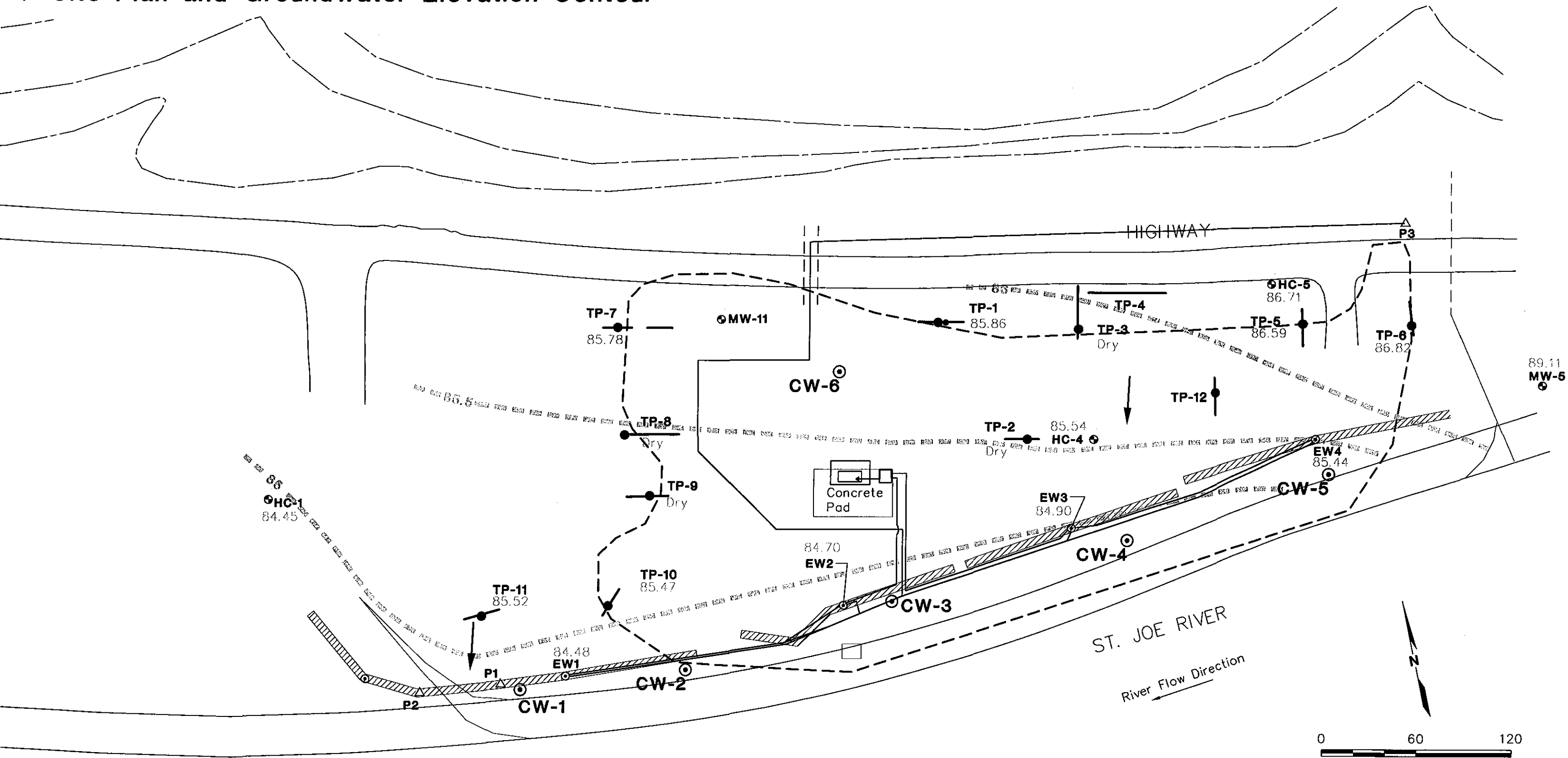
T.O.C. - Top of Casing

ND - Not Detected

NA - Not Available

NM - Not Measured

Site Plan and Groundwater Elevation Contour



Exploration Location and Number

- MW-4 Monitoring Well
- EW1 Extraction Well
- △ P1 Piezometer
- HC-5 Lost During Construction (1997)

Approximate Groundwater Elevation Contour in Feet

- ← Approximate Groundwater Flow Direction
- ▨ Existing Extraction Trench

Note: TP-1 has two well casings, 4-inch and 2-inch. Other test pits have 4-inch casings.

— TP-1 Test Pit Location and Number

- Monitoring Well Location



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Earth and Environmental Technologies

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NORTHERN WOODLAND

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102
FAX 206.328.5581
206.324.9530

MEMORANDUM

DATE: December 2, 1993

TO: Norm Linton; Potlatch Corporation
Gary Parish; Popham, Haik

FROM: David Winter

RE: Proposed Draft Replacement for Free Phase Recovery Completion Section
in the Draft Consent Order and Remediation Plan, Avery Landing
J-2294-04

After considerable thought and in-house discussion we have concluded that we probably will have no success proposing an acceptance criteria completely different than the 0.1 inch of free product currently in the draft. This is because we do not have a strong technically-based argument to support our belief that such a cleanup level is neither practically achievable nor necessary for surface water protection. In most free product recovery systems, the practical life or measure of success of the system is determined either on the basis of residual product level (usually measured in wells, and dependent on the well locations) or on the amount of recovered product (usually established based on observed or historical product recovery rates).

Based on these thoughts, we propose keeping the 0.1 inch criteria in place, but offering an option to consider alternatives if the monitoring data we collect in the first year or two of operation suggest that the 0.1 criteria cannot be practically met. For example, at the end of paragraph 7.E., on page 3 of the Consent Order, and after the sentence ending "... and the recovery trench." at the bottom of page 4 of 6 on the Remediation Plan, insert the following sentences:

PAL 001712



Potlatch Corporation
December 2, 1993

J-2296-04
Page 2

"After collecting at least two years of recovery and monitoring data, Potlatch and CMC may, as part of the annual report, propose an alternative recovery system shutdown criterion. Such an alternative would be based on the probable decreasing product recovery rates and asymptotically decreasing rate of change in monitoring well free product thicknesses over time. A revised criterion considering recovery rate may be appropriate. If the collected data suggest that the free product recovery system in place has attained or nearly attained an asymptotic limiting recovery rate or product thickness or both, the parties to this agreement could agree to the minimum one year system shutdown, even if the free product thickness in the wells and trench exceeds 0.1 inch."

One other note: I have found in our files records of a product sample analysis from 1989 that included test results for arsenic, cadmium, chromium, and lead, plus flash point and total halogens, the information required under Subpart E - Used Oil Burned for Energy Recovery. The test results (summary attached) indicate that the product does not exceed any of the allowable levels of the constituents and properties in the specification table. Our field representative, Chris Holloway, is obtaining additional samples of the product so that we can rerun the analyses, if you wish.

I look forward to discussing these items with you.

DRFTREPLMEM

Attachment:

A - Laboratory Report Summary
Spectra Laboratories, Inc.

Hart Crowser
J-2294-04

ATTACHMENT A
LABORATORY REPORT SUMMARY
SPECTRA LABORATORIES, INC.



SPECTRA Laboratories, Inc.

5013 Pacific Hwy. E. #12 • Tacoma, WA 98424 • (206) 922-5120

October 17, 1989

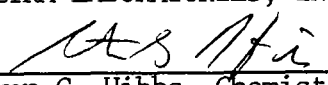
Analytical Resources Inc.
333 Ninth Avenue North
Seattle, WA 98109-5187
Customer #81570

Sample ID: MW-4/5-1 3747-C
Desc: Oil
Spectra #27474
RUSH

Attn: Dave Mitchell

Cadmium	(Cd), ppm	<1
Chromium	(Cr), ppm	1
Lead	(Pb), ppm	5
Arsenic	(As), ppm	<1

SPECTRA LABORATORIES, INC.


Steven G. Hibbs, Chemist



SPECTRA Laboratories, Inc.

5013 Pacific Hwy. E. #12 • Tacoma, WA 98424 • (206) 922-5120

October 5, 1989

Analytical Resources Inc.
333 Ninth Ave North
Seattle, WA 98109-5187
Customer #81570

Sample ID: MW 4/S-1
ARI #3747-C
Spectra #26941


Attn: Catherine Greer

Total halogens, ppm	<1
Flash Point, PMCC °F	>210

EP Toxicity Metals, mg/l

Lead (Pb)	<0.01
Chromium (Cr)	<0.002
Silver (Ag)	<0.004
Barium (Ba)	0.005
Cadmium (Cd)	<0.005
Arsenic (As)	<0.08
Mercury (Hg)	<0.02
Selenium (Se)	<0.1

SPECTRA LABORATORIES, INC.


Steven G. Hibbs, Chemist



HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102
FAX 206.328.5581
206.324.9530

MEMORANDUM

DATE: December 29, 1993

TO: Greg Rapp and Norm Linton, Potlatch Corporation

FROM: David Winter

RE: Results of December 1993 Site Visit and Testing
Avery Landing
J-2296-04

On December 4 and 5, 1993, Chris Holloway of Hart Crowser was at the Avery Landing site to purge and clean the wells, to remeasure the product and groundwater levels, and to collect an additional product sample for testing. This memorandum summarizes the results of his on-site activities and the chemical analyses data. Attached is Table 1 combining our October and December information.

The two wells with about four feet of product, HC-4 and No. 11, were purged of the product and surged with water in an attempt to verify the product thickness. The full product thickness had not returned to the wells by the time we left the site. Because of the viscosity of the product and the current cold temperatures, it may take some time for the conditions in those wells to again reach equilibrium. We obtained an additional product sample from HC-4 and submitted it to the laboratory for testing. The chemical test results are:

Arsenic	< 2.4 mg/kg (ppm)
Cadmium	< 0.24 mg/kg
Chromium	< 0.48 mg/kg
Lead	< 1.4 mg/kg
Flash Point	> 180 degrees F
Total Organic Halides	< 40 mg/kg

< = Not detected at detection limit indicated.

PAL 001709



Potlatch Corporation
December 29, 1993

J-2296-04
Page 2

These results are consistent with previous analyses, and below regulatory limits for used oil burned for energy recovery.

I plan to meet with you in St. Maries on January 12, 1994, as we discussed, to review the planned remediation and develop a general work plan for installation. No further site activities seem necessary or possible until the spring. Would you please send us a copy of your final agreed upon Consent Order?

PTLCHDEC.MEM

Attachment:

Table 1 - Status of Monitoring Wells at Avery Landing

Table 1 – Status of Monitoring Wells at Avery Landing

Well No.	Ground Surface	Bottom	Product Elevation		Groundwater Elevation		Notes
	Elevation	Elevation	Oct. 1993	Dec. 1993	Oct. 1993	Dec. 1993	
	in Feet						
HC-1R	-2.17	-20.17	None	None	-15.87	-14.98	Installed 10/93
HC-3	-0.46	-18.56	None	None	-15.36	-14.8	Silty; Surged and Purged
HC-4	-0.88	-18.88	-11.88	-13.88	-15.88	-14.18	Purged 12/93; Sampled
HC-5	-1.86	-19.86	None	None	-13.96	ND	Installed 10/93; Water Covered 12/93
No. 1	-1.26	-10.56	None	None	None	None	
No. 2	-1.59	-10.69	None	None	None	None	Installed new cap
No. 3	-1.72						Well obstructed
No. 4	-1.53	-17.53	-14.23	-14.33	-14.53	-14.63	
No. 5	-1.8	-15.65	None	ND	-14.5	ND	Brush- and snow-covered 12/93
No. 6	-1.56	-10.66	None	ND	-10.16	ND	Installed new cap
No. 9	-0.98	-10.98	None	None		None	
No. 11	-1.99	-16.99	-11.99	0.3 ft thick	-15.99	ND	Purged 12/93

Note: Relative elevations based on center of 30-ft x 50-ft concrete slab nearby

2296-04\PTLCHDEC.WK1

PAL 001711

Hart Crowser
J-2296-04



HARTCROWSER

Earth and Environmental Technologies

*Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102
FAX 206.328.5581
206.324.9530*

MEMORANDUM

DATE: July 27, 1994

TO: Greg Rapp, Potlatch Corporation

FROM: Barry Kellems

RE: Draft Final Design of Free Product Recovery System (FPRS)
Avery Landing, Idaho
J-2296-05

The draft final plans, implementation schedule, and health and safety plan for the Avery Landing FPRS have been submitted under separate cover. The final design contains the following modifications relative to the July 1990 preliminary plans and May 2, 1994, Implementation Work Plan:

1. The infiltration trench will be constructed on the north side of the roadway, between the roadway and the rock slope, instead of the south side as originally planned. The extracted groundwater conveyance pipe will be routed under the roadway through an existing culvert. This modification will enlarge the capture zone and increase the effectiveness of the FPRS.
2. The extraction trench will be segmented into three separate 150-foot-long trenches, for a total trench length of 450 feet. The 50 feet of additional trench length relative to the 400-foot-long trench shown on the preliminary plans is required to effectively capture free product at the site. Segmenting the trench will allow greater hydraulic control and flexibility to respond to river and hydrogeologic conditions in the future. Segmenting the trench will also allow phased construction. No additional equipment or piping will be required for this modification.

PAL 001608





Potlatch Corporation
July 27, 1994

J-2296-05
Page 2

3. A pneumatic (air-operated an-controlled) pumping system will be used to recovery free product within the extraction trench. Pneumatic pumps have become standard practice for free product recovery over the last few years. Groundwater extraction will be conducted using electric pumps, as originally planned.
4. The final plans show the existing monitoring wells specified as compliance monitoring points in the Remediation Plan (HC-1R, HC-3, HC-4, MW-4, MW-5, and MW-11). One compliance monitoring point (HC-2) is not shown because it apparently is no longer operational.

Please review the documents and offer comments. After we receive your comments we will make the necessary modifications and finalize the documents. At that time, we will provide a stamped set of plans for the Idaho DEQ.

FPRS.mem

PAL 001609



HARTCROWSER

Earth and Environmental Technologies

(4 originals Received)
1. Norm Linton
1. Greg Rapp
1. Kevin Boling
1. Mike McNichols

XC: Guy Griffin S.F. office

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102
FAX 206.328.5581
206.324.9530

RECEIVED

NOV 23 1993

J-2296-04

November 22, 1993

Mr. Greg Rapp
Mr. Norm Linton
Potlatch Corporation
P.O. Box 386
St. Maries, Idaho 83861

Re: Report of Sampling and Analyses
Avery Landing

Dear Greg and Norm:

This letter report summarizes the results of our field well installation and sampling, and laboratory analyses of groundwater and floating product at the Avery Landing site. The purposes of this study were to verify which groundwater wells were still accessible and usable, confirm the presence of free product, and review the issues associated with the draft consent order from the Idaho Department of Environmental Quality (IDEQ).

Limitations of this Study and Report

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Potlatch Corporation for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

PAL 001613



It should be noted that Hart Crowser relied on verbal information provided by the individuals indicated above. Hart Crowser can only relay this information and cannot be responsible for its accuracy or completeness.

Summary of Work Done for this Project

On September 2, 1993 Hart Crowser prepared a memorandum to you summarizing our review of data you supplied for the site that were collected in August of 1992. In that review we noted several deficiencies and inconsistencies in the data. We recommend that subsequent Hart Crowser sampling events attempt to clarify the EPA data. Refer to the September 2 memorandum for a complete assessment of the sampling and testing information.

On November 3, 1993, Hart Crowser prepared a memorandum to you summarizing our review of the draft consent order and remediation plan from IDEQ dated November 6, 1992. We concluded that the general stipulation of the order will not add significant costs to the project as we had envisioned it, but there were a few scope increases for Potlatch to consider. Refer to the memorandum for a complete discussion. One key item will be the implementation of regular monitoring of groundwater and product levels at the site. This will probably require that additional wells be installed.

On October 26 and 27, 1993, we installed two new groundwater monitoring wells, designated HC-1R and HC-5, and checked the condition of the existing wells installed previously at the site. Our goal was to identify and sample as many wells as possible, noting both the groundwater levels and the product levels in the wells. Unfortunately most of the wells were unusable, as outlined in Table 1 of this report. We obtained two groundwater samples and one product sample. We tested the water for TPH and the product for hydrocarbon constituents and PCBs.

Monitoring Well Status

Table 1, presented at the end of this letter, summarizes our efforts to identify and sample the wells at the Avery Landing site on October 26 and 27, 1993.



To summarize, of the nineteen wells installed at the site, including the two new ones for this study, only twelve remain. Of the twelve, one is apparently obstructed and not usable, three were dry and may be screened above the groundwater level (four may actually be screened above the water level since one of these was not capped but contained a small amount of water), two were very silty or silted up but could possibly be redeveloped, two contained groundwater only, and three contained floating product above the groundwater. Refer to the two Site and Exploration Plans (Figure 1 and 2) for approximate locations of the wells installed at the site and the locations and status of the remaining twelve.

We collected groundwater samples from new wells HC-1R and HC-5. We collected product samples from well HC-4, which we split with representatives of the IDEQ. In the Hart Crowser Chemistry Laboratory we tested the water samples for Total Petroleum Hydrocarbons using EPA Method 418.1. We tested the product for fuel hydrocarbons using Method TPH-HCID and for PCBs using a screening analysis. The Chemistry Laboratory Analytical Report is presented in Appendix B.

Laboratory Analysis Results

In the free product sample obtained from HC-4 our analyses detected no PCBs. This is consistent with our product analysis reported to you in a letter report dated October 27, 1989. Our analyses indicated that the product consisted primarily of diesel/fuel oil and heavier oil.

Groundwater samples from HC-1R and HC-5 showed consistent TPH results, with just over 1.0 mg/kg (ppm) in each. These results are also comparable to the previous sampling event in 1989 which detected no hydrocarbons in the groundwater, although the detection limits were higher for the previous testing. Note that the most often applied groundwater compliance levels for surface water protection are between 1 and 10 mg/kg.

In the EPA sampling results from 1992 the data indicated elevated concentration of benzene, PAHs, and metals in the groundwater sampled in HC-3. In our September 2 memorandum we speculated that the concentrations of metals in particular suggested that the sample had significant suspended solids. We did not sample HC-3



because of the high solids buildup in the casing. Our findings in this case lend further doubt to the dependability of the EPA test results.

Conclusions and Recommendations

1. We were not able to obtain enough samples from enough locations to draw clear conclusions as to the extent of the free product lens nor the current thickness of the free product. Some work needs to be done on the wells to verify that our measurements reflect the subsurface conditions accurately.
2. The remaining groundwater monitoring wells do not provide adequate coverage of the area, particularly since several of them are dry at least some of the year. An attempt needs to be made to clear the two silted wells, and to check the water levels at other times of the year. Even so, it will probably be necessary to install three or four additional monitoring wells to comply with the monitoring and assessment requirements of the agreed order.
3. We recommend trying to clean out and redevelop all of the accessible wells - those with silt and those with product - very soon, before the area is covered with snow. If we can accomplish this work yet this year we will better be able to plan the additional installations and monitoring requirements to accompany the site remedial activities to begin next spring.
4. Since the analytical results confirm that PCBs are not apparently present in the product we believe Potlatch can plan to recycle or burn the product collected from the remediation system next year.
5. Based on these results, we see no need to modify the general concept for remediation as we have previously outlined. Additional groundwater and free product location information could result in some altering of the recovery and injection trench locations.

Cost?
Estimate
\$ 3800,00



Potlatch Corporation
November 22, 1993

J-2296-04
Page 5

We hope this report meets your immediate needs. We look forward to continued discussions and to site remediation. If you have questions about this report or other matters please contact me.

Sincerely,

HART CROWSER, INC.

DAVID G. WINTER, P.E.
Principal
Manager, Remediation Services

DGW:sde
AVERY.lr

Attachments:

Table 1 - Status of Monitoring Wells at Avery Landing - October 1993
Figure 1 - Site and Exploration Plan - All Previous Monitoring Wells
Figure 2 - Site and Exploration Plan - Twelve Remaining Monitoring Wells
Appendix A - Field Procedures
Appendix B - Chemistry Laboratory Analytical Report

PAL 001617

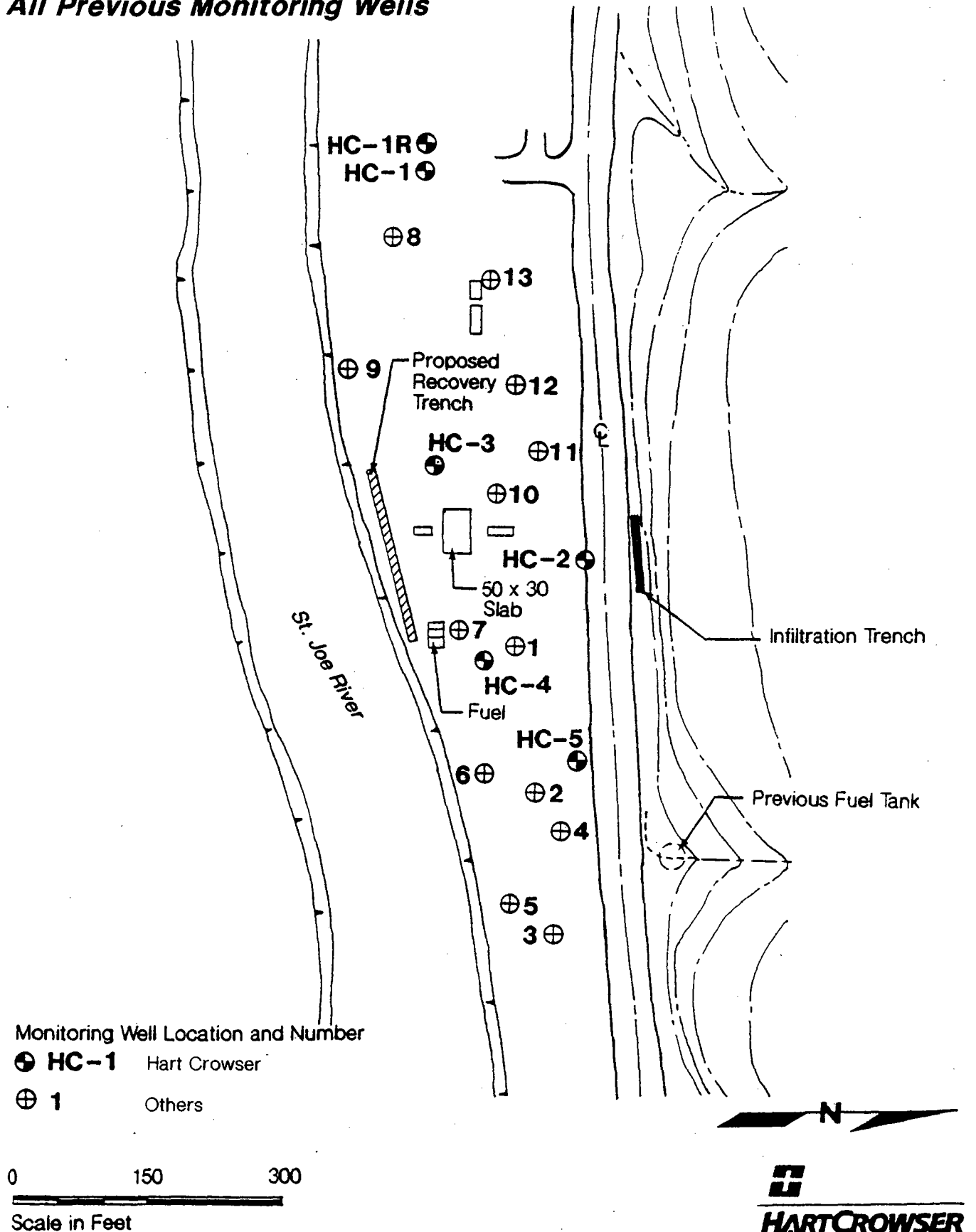
Table 1 - Status of Monitoring Wells at Avery Landing - October 1993

Well No.	Well Depth below Ground Surface in Feet			Condition	Notes
		Product Level	Water Level		
HC-1	18.8	--	--	Missing	
HC-1R	18	None	13.7	Instal 10/26	Water Sample
HC-2	23.4	--	--	Missing	
HC-3	18.1	None	14.9	Silted	(1)
HC-4	18	11	15	OK	Prod Smpl (2)
HC-5	18	None	12.1	Instal 10/26	Wtr Smpl (3)
No. 1	9.3	None	None	OK	(4)
No. 2	9.1	None	None	No Cap	(4)
No. 3	5	None	None	Obstructed?	
No. 4	16.0	12.7	13.0	OK	
No. 5	13.85	None	12.7	Very Silty	(5)
No. 6	9.1	None	8.6	No Cap	(4), (5)
No. 7	--	--	--	Missing	
No. 8	--	--	--	Missing	
No. 9	10.0	None	None	OK	(4)
No. 10	--	--	--	Missing	
No. 11	15.0	10.0	14	OK	(2)
No. 12	--	--	--	Missing	
No. 13	--	--	--	Missing	

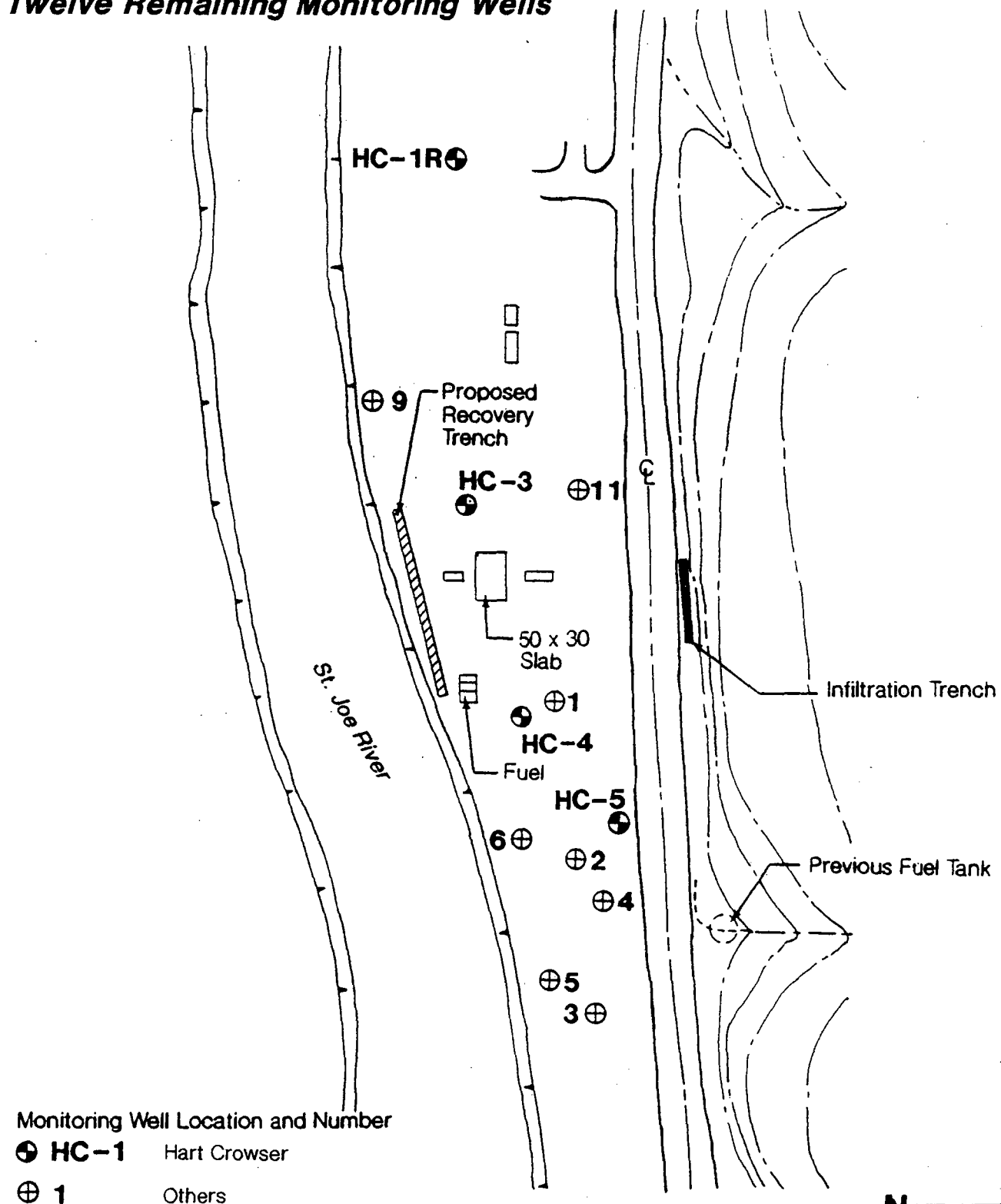
- Notes:
- (1) Too silty to sample. Should try to redevelop and sample or replace. No odors or evidence of product on bailer.
 - (2) Product possibly trapped in well casing and may not reflect actual current conditions. Well should be purged and resampled. IDEQ obtained duplicate product sample 10/27/93.
 - (3) Strong odor when drilling. No visible product in soil and water samples. Should resample in spring.
 - (4) These wells may be too shallow to encounter either product or groundwater table. Should reassess in the spring when the water levels may be higher.
 - (5) No odor or visible product on depth gauge.

Site and Exploration Plan

All Previous Monitoring Wells



Site and Exploration Plan Twelve Remaining Monitoring Wells



0 150 300
Scale in Feet

HARTCROWSER
J-2296-04 11/93
Figure 2

APPENDIX A
FIELD PROCEDURES

APPENDIX A FIELD PROCEDURES

INTRODUCTION

Field work was completed on October 26 and 27, 1993, by Hart Crowser, Inc., and their subcontractor. Hart Crowser's field representative for this project was Chris Holloway, Senior Staff Geologist.

Environmental West, Inc., of Spokane, Washington, under subcontract to Hart Crowser, completed the drilling and well installation activities on the two wells. Groundwater and product samples were submitted to Hart Crowser Chemistry Laboratory in Seattle, Washington, for chemical analysis.

The program of well installation included the completion of two borings, both of which were completed with air rotary drilling methods using compressed air to lift cuttings from the boring.

The monitoring well locations are presented on Figures 1 and 2. Locations were established by hand taping or pacing from existing physical features.

Air Rotary Borings

The borings were completed using percussion bit rotary drilling and air-lifted cuttings. Borings were drilled on October 26, 1993, and completed to a depth of 18 feet below the ground surface. Borings were advanced with a truck-mounted drilling rig using an air-driven percussion bit inside a six-inch inside diameter driven casing. Drilling was accomplished under the continuous observation of a Hart Crowser field representative.

Well Installations

The wells are of 2-inch inside diameter Schedule 40 PVC single well construction and have 10-foot screened sections with 0.020-inch slot size. The wells were installed by lowering the casing to the desired depth. No. 8 to No. 12 size silica sand was used to backfill the annulus around

the screen to a level 2 feet above the top of the screen. Bentonite chips were used to backfill and grout the borehole to a depth of 2 feet below the surface. The two wells have a concrete surface seal and are protected by either a flush or stickup locking steel monument. Well construction information is presented on Figures A-2 and A-3. Figure A-1 presents a key to the exploration logs.

Water Level Measurements

Water level measurements were made for each boring at the time water was first observed during drilling, and immediately prior to placement of the well screen. Subsequent sets of water level measurements were made of all wells installed. These were made before well development and sampling.

Water levels were measured to an accuracy of 0.01 foot using an Actat Electric Well Probe and a decimally graduated tape measure. The tip of the well probe was routinely rinsed with deionized water between wells in order to prevent chemical cross contamination.

Well Development

Development of wells was accomplished by hand bailing. Wells were developed by purging at least four casing volumes of water to remove the fine-grained silt and sand and suspended clay from the well bottom. Both the wells retained turbidity after development.

Groundwater and Free-Phase Hydrocarbon Sampling for Chemical Analysis

Groundwater samples were obtained from the two monitoring wells on October 27, 1993. Free-phase hydrocarbon from HC-4 and groundwater samples from HC-1-R and HC-5 were collected on October 27, 1993.

Groundwater samples from monitoring wells were obtained using a stainless steel bailer. To obtain representative groundwater samples, at least 3 casing volumes of water were purged prior to actual sampling. Water was then poured from the bailer into appropriate laboratory provided bottles.

Free-phase hydrocarbons were detected in monitoring well HC-4 during our October 27, 1993, visit. HC-4 was not purged prior to sampling; in this case, the free-phase hydrocarbons were poured from a plastic disposable bailer into a laboratory provided bottle.

All samples were labeled and placed in an ice insulated cooler. Sample custody was documented at all times.

Decontamination Procedures

Drilling, sampling, and testing equipment were routinely decontaminated in the field. Decontamination of drilling equipment between explorations consisted of steam cleaning followed by a tap water rinse. PVC components (screen, riser, and end caps) used in well construction were also steam cleaned and rinsed in tap water prior to installation.

The well probe and sampling bailers were decontaminated with a wash of distilled water and detergent followed by two distilled water rinses.

Chain of Custody

Sample jars were prelabeled with well number, job number, date, and the samplers initials. Chain of custody forms were filled out, signed, and countersigned for transfers of samples from the possession of Hart Crowser field representatives to personnel at the Hart Crowser Chemistry Laboratory. Chain of custody documents are maintained in the QA/QC records of Hart Crowser.

Attachments:

Figure A-1 - Key to Exploration Logs
Figures A-2 and A-3 - Boring Log and Construction Data for
Monitoring Well HC-1R and HC-5

Key to Exploration Logs

Sample Description

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:

Density/consistency, moisture, color, minor constituents, MAJOR CONSTITUENT, additional remarks.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance.

Soil density/consistency in test pits is estimated based on visual observation and is presented parenthetically on the test pit logs.

SAND or GRAVEL	Standard Penetration Resistance (N) in Blows/Foot	SILT or CLAY	Standard Penetration Resistance (N) in Blows/Foot	Approximate Shear Strength in TSF
Density		Consistency		
Very loose	0 - 4	Very soft	0 - 2	<0.125
Loose	4 - 10	Soft	2 - 4	0.125 - 0.25
Medium dense	10 - 30	Medium stiff	4 - 8	0.25 - 0.5
Dense	30 - 50	Stiff	8 - 15	0.5 - 1.0
Very dense	>50	Very stiff	15 - 30	1.0 - 2.0
		Hard	>30	>2.0

Moisture

Dry	Little perceptable moisture
Damp	Some perceptable moisture, probably below optimum
Moist	Probably near optimum moisture content
Wet	Much perceptable moisture, probably above optimum

Minor Constituents

Estimated Percentage

Not identified in description	0 - 5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

Legends

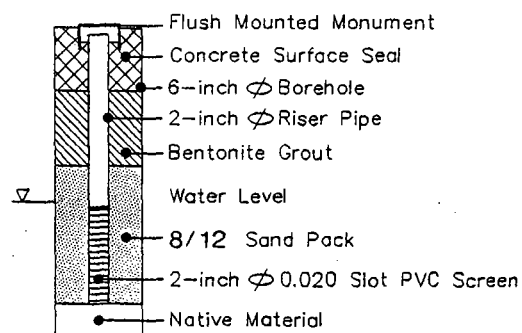
Sampling Test Symbols

BORING SAMPLES	TEST PIT SAMPLES
Split Spoon	Grab (Jar)
Shelby Tube	Bag
Cuttings	Shelby Tube
Core Run	
* / NS No Sample Recovery	
P Tube Pushed, Not Driven	

Test Symbols

GS	Grain Size Classification
CN	Consolidation
TUU	Triaxial Unconsolidated Undrained
TCU	Triaxial Consolidated Undrained
TCD	Triaxial Consolidated Drained
QU	QU
DS	Direct Shear
K	Permeability
PP	Pocket Penetrometer Approximate Compressive Strength in TSF
TV	Torvane Approximate Shear Strength in TSF
CBR	California Bearing Ratio
MD	Moisture Density Relationship
AL	Atterberg Limits
	Water Content in Percent
PID	Photoionization Reading

Groundwater Observations



HARTCROWSER

J-2296-04 11/93

Figure A-1

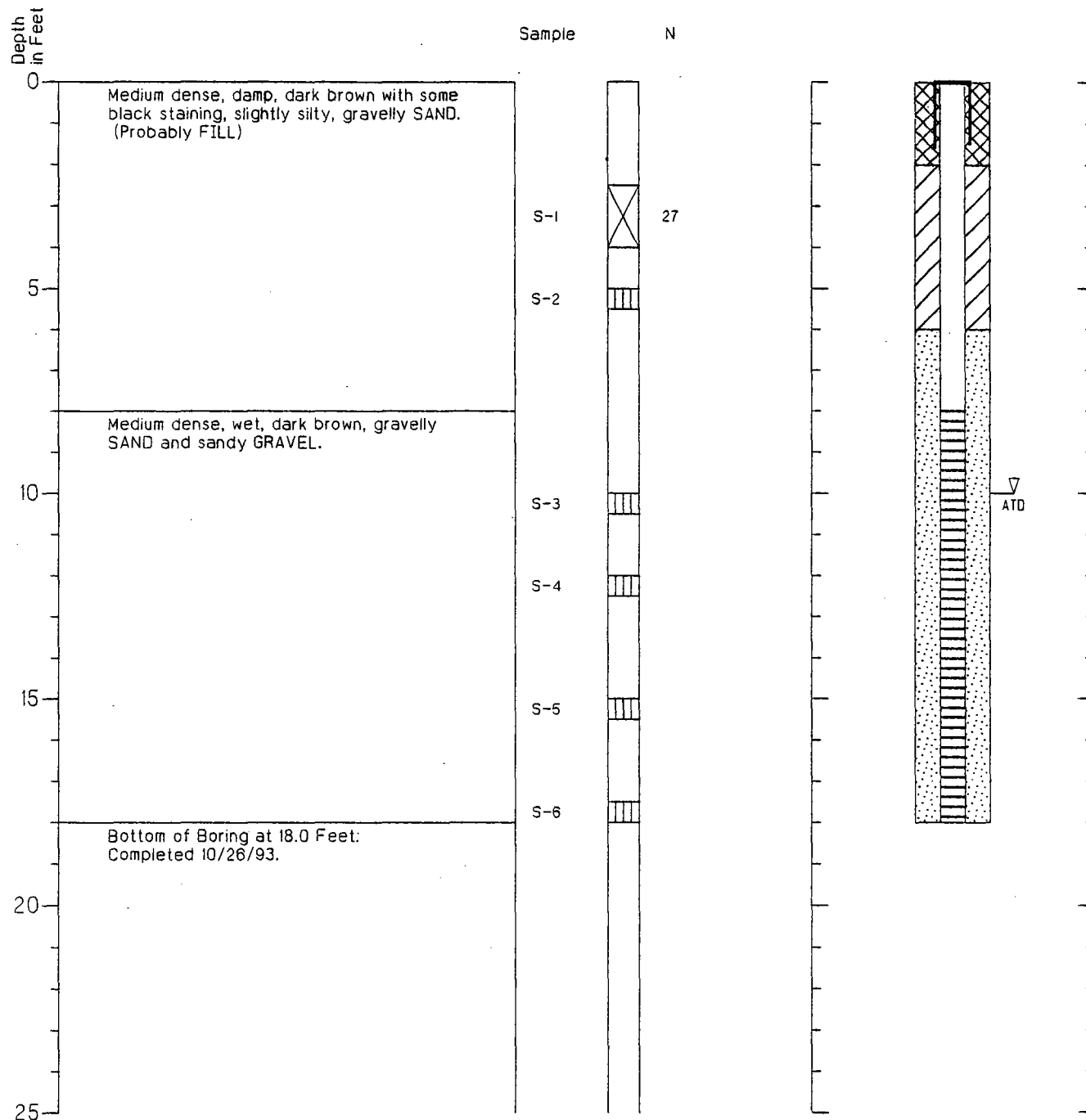
PAL 001625

Boring Log and Construction Data for Monitoring Well HC-1-R

Geologic Log

Monitoring Well Design

Casing Stickup in Feet: 0



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



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J-2296-04 10/93

Figure A-2

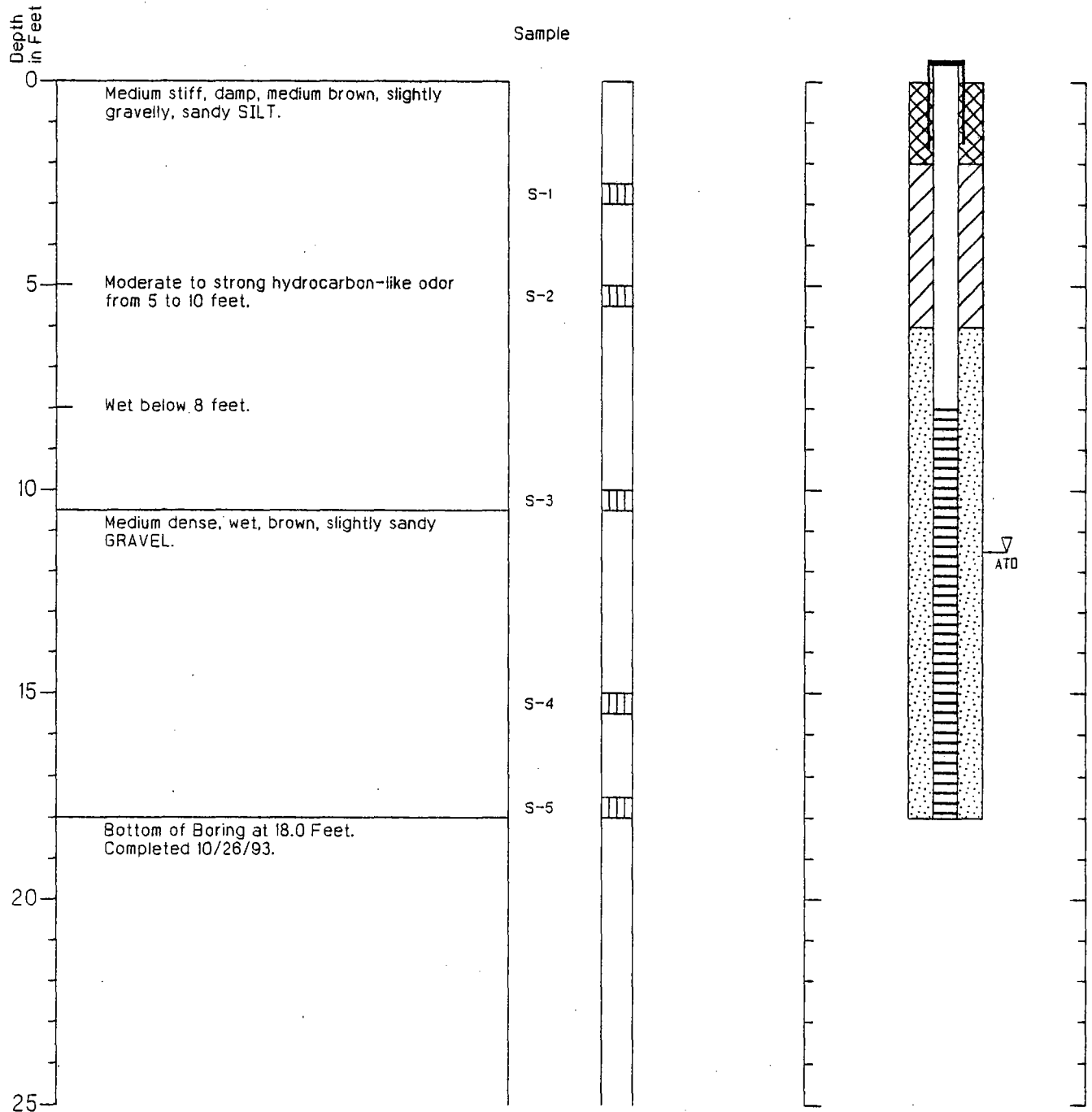
PAL 001626

Boring Log and Construction Data for Monitoring Well HC-5

Geologic Log

Monitoring Well Design

Casing Stickup in Feet: .5



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



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J-2296-04

10/93

Figure A-3

APPENDIX B
LABORATORY ANALYTICAL REPORT
HART CROWSER CHEMISTRY LABORATORY



HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102
FAX 206.328.5581
206.324.9530

CHEMISTRY LABORATORY ANALYTICAL REPORT

November 16, 1993

David Winter, Hart Crowser Principal

RE: Potlatch Corporation Avery Landing, J-2296-04

Attached are the compiled results from analyses conducted on samples received November 1, 1993. We performed extractions and analyses as indicated:

	Matrix	Quantity	Date Extracted	Date Analyzed
▶ TPH-HCID	Product	1	11/02/93	11/03/93
▶ PCB Screen	Product	1	11/02/93	11/02/93
▶ TPH-418.1	Water	2	11/03/93	11/05/93

This report contains the following:

- ▶ Analytical results for water and product samples.
- ▶ Data qualifiers.
- ▶ Results for method blanks.
- ▶ Differences for duplicate analyses.
- ▶ Recoveries for laboratory control sample.
- ▶ Supplemental information describing screening methods.
- ▶ Copies of chain of custody forms.



Hart Crowser
J-2296-04

Analytical Limitations

Analyses of the PCB samples were performed using screening techniques. PCB quantitations are estimates, compound identifications are tentative.

HART CROWSER, INC.

CHW *ER JEA*

JAMES HERNDON

Laboratory Manager

Washington State Department of Ecology

Laboratory Accreditation Number C134



Hart Crowser
J-2296-04

Analytical Results

Results in ppm (mg/kg or mg/L)

Compound	HC-4
-----	-----
Matrix	Product
Gasoline	10,000 U
Kensol	10,000 U
Kerosene/Jet A	10,000 U
Stoddard Solvent	10,000 U
Diesel/Fuel Oil #2	460,000
Bunker C	50,000 U
Oil	300,000
Unknown	10,000 U
=====	=====
Total TPH Concentration	760,000
-----	-----
2-Fluorobiphenyl (surr #1)	115%
o-Terphenyl (surr #2)	101%
Hexacosane - nC26 (surr #3)	101%
-----	-----
A1016	5.0 U
A1221	5.0 U
A1232	5.0 U
A1242	5.0 U
A1248	2.0 U
A1254	2.0 U
A1260	2.0 U
A1262	2.0 U
A1268	2.0 U
-----	-----
Tetrachloro-m-xylene (surr)	103%
Decachlorobiphenyl (surr)	83%
-----	-----



Hart Crowser
J-2296-04

Analytical Results, continued

Results in ppm (mg/kg or mg/L)

Compound	HC-1R	Duplicate	
		HC-5	HC-5
Matrix	Water	Water	Water
TPH (418.1)	1.3	1.2	1.2

Data Qualifiers

U Not detected at indicated detection limit.
- Below detection limit.
J Estimated value below detection limit.
B Also detected in associated method blank.
M Unable to calculate recovery due to matrix interference.
n/t Test not performed.
n/a Not applicable.
Surr Surrogate compound.



Hart Crowser
J-2296-04

Method Blanks

Results in ppm (mg/kg or mg/L)

Compound	11/02/93
-----	-----
Matrix	Product
Gasoline	10,000 U
Kensol	10,000 U
Kerosene/Jet A	10,000 U
Stoddard Solvent	10,000 U
Diesel/Fuel Oil #2	20,000 U
Bunker C	50,000 U
Oil	50,000 U
Unknown	10,000 U
=====	=====
Total TPH Concentration	-
-----	-----
2-Fluorobiphenyl (surr #1)	100%
o-Terphenyl (surr #2)	100%
Hexacosane - nC26 (surr #3)	100%
-----	-----
A1016	5.0 U
A1221	5.0 U
A1232	5.0 U
A1242	5.0 U
A1248	2.0 U
A1254	2.0 U
A1260	2.0 U
A1262	2.0 U
A1268	2.0 U
-----	-----
Tetrachloro-m-xylene (surr)	124%
Decachlorobiphenyl (surr)	141%
-----	-----



Hart Crowser
J-2296-04

Method Blanks, continued

Results in ppm (mg/kg or mg/L)

Compound	11/03/93

Matrix	Water
TPH (418.1)	0.5 U

Duplicates

Relative % Difference

Compound	HC-5

Matrix	Water
TPH (418.1)	0%



Hart Crowser
J-2296-04

Laboratory Control Sample

% Recovery

Compound	11/02/93
Matrix	Product
Kerosene/Jet A	101%
2-Fluorobiphenyl (surr #1)	M
o-Terphenyl (surr #2)	100%
Hexacosane - nC26 (surr #3)	98%
A1254	136%
Tetrachloro-m-xylene (surr)	120%
Decachlorobiphenyl (surr)	132%

Compound	11/03/93
Matrix	Water
TPH (418.1)	81%



Hart Crowser
J-2296-04

Hart Crowser Chemistry Laboratory
PESTICIDE / PCBs SCREEN

Polychlorinated Biphenyls (PCBs) and Pesticides are analyzed using a simple solvent extraction and acid cleanup procedure to prepare the sample. Quantitation and identification are performed using a gas chromatograph (GC) with an Electron Capture Detector (ECD). Approximate concentrations and tentative identifications derived from this screening method should be confirmed using EPA method 608, 612, 617, 625, 8080, 8120, or 8270.

Detection Limits

<u>Compound</u>	Routine Detection Limits*	
	in ppb ($\mu\text{g/kg}$ or $\mu\text{g/L}$)	
	<u>soil</u>	<u>water</u>
Aldrin	20	0.1
alpha-BHC	20	0.1
beta-BHC	20	0.1
gamma-BHC (Lindane)	20	0.1
delta-BHC	20	0.1
4,4'-DDD	30	0.2
4,4'-DDE	30	0.2
4,4'-DDT	30	0.2
Dieldrin	30	0.2
Endosulfan I	20	0.1
Endosulfan II	30	0.2
Endosulfan Sulfate	30	0.2
Endrin	30	0.2
Endrin Aldehyde	30	0.2
Heptachlor	20	0.1
Heptachlor Epoxide	20	0.1
a-chlordane	20	0.1
g-chlordane	20	0.1
Methoxychlor	150	0.8
Toxaphene	200	1.0

* = Wet Weight Basis



Hart Crowser
J-2296-04

<u>Compound</u>	Routine Detection Limits*	
	<u>soil</u>	<u>water</u>
Aroclor 1016	500	5
Aroclor 1221	500	5
Aroclor 1232	500	5
Aroclor 1242	500	5
Aroclor 1248	200	2
Aroclor 1254	200	2
Aroclor 1260	200	2
Aroclor 1262	200	2
Aroclor 1268	200	2

* = Wet Weight Basis

Sample Extraction Technique

Five gms of soil are placed in culture tube. One half ml of methanol is added to bind water. Five mls of hexane are added to the sample. The tube is capped and agitated for fifteen minutes. The tube is then placed in a centrifuge to settle particulates and separate the phases.

For PCB analysis, a two ml aliquot of the extract is transferred to a second container. One ml of concentrated sulfuric acid is added and the extract agitated. The vessel is placed in a centrifuge to settle the acid.

For pesticide analysis acid cleanup procedure is not used. Acid causes degradation of some pesticides.

Analytical Equipment

Analysis is performed using a Hewlett Packard 5890A gas chromatograph with an autosampler. The analytical column is a fused silica capillary column. The detector is an Electron Capture Detector (ECD). Sample capacity 35 samples per day.



Hart Crowser
J-2296-04

Identification and Quantitation

Identification of PCBs are made by comparison to chromatograms of PCB standards analyzed on our GCs. All identifications are tentative. Quantitation of PCBs are made using a single concentration calibration standard for each PCB and five characteristic peaks for each standard. All quantitations are estimates.

Identification of pesticides are made by retention time comparisons to standards run during the analytical sequence. All identifications are tentative. Quantitation of volatiles are made using a single external concentration calibration standard. All quantitations are estimates.

Quality Control

Method blank	One per day or matrix
Matrix spike	One per 20 samples, sample set or matrix
Duplicate	One per 20 samples, sample set or matrix.
Target QC Values	Recovery +/- 50%
	Relative Difference <25%
Confirmation Samples	Recommend 10 to 20% samples split to confirming lab.

①

HARTCROWSER

PAL 001639



HARTCROWSER

Earth and Environmental Technologies
J-2296-05

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
Fax 206.328.5581
Tel 206.324.9530

November 4, 1994

Mr. Gregory A. Rapp
Construction Services Manager
Potlatch Corporation
1100 Railroad Avenue
P.O. Box 386
St. Maries, Idaho 83861

Re: Laboratory Results for Excavated Soils
Avery Landing Recovery System

Dear Mr. Rapp:

This letter presents the laboratory analytical results for samples of soil excavated during construction of the recovery system at the Avery Landing site. Sampling and analysis were conducted based on the Remediation Plan (Exhibit B of the Consent Order), as agreed to by John Sutherland and Brian Painter of the Idaho Division of Environmental Quality (IDEQ) at the pre-construction meeting on August 10, 1994.

The sampling and analysis of excess excavated soil were conducted as follows:

- ▶ Soil samples were collected at a rate of one per 100 cubic yards. A total of 16 samples (SP-1 through SP-16) were collected although soils represented by six of the samples (SP-1 through SP-6) were subsequently used as backfill. Approximately 1,000 cubic yards of soil remain stockpiled at the site, represented by samples SP-7 through SP-16. The approximate sampling locations on the soil stockpile are shown on Figure 1.
- ▶ The 16 samples were analyzed for Total Petroleum Hydrocarbons (TPH) by Method 418.1, by Laucks Testing Laboratories, Inc., of Seattle, Washington. The TPH results are presented in Attachment A.
- ▶ The soil sample having the highest TPH concentration (SP-13) was analyzed for total concentrations of the eight RCRA TCLP metals, PCBs by Method SW8080, and base

PAL 003021





neutral and acid extractable organics (BNAs) by Method SW8270. These results are presented in Attachment B.

The analytical results show that metals and PCBs were not detected at elevated concentrations. Although the highest TPH concentration was 3,400 mg/kg, the polynuclear aromatic hydrocarbon (PAH) compounds in this sample were below 1 mg/kg. Based on the primary source of contaminants at the site (bunker C/heavy-end petroleum hydrocarbons), this relatively low PAH concentration indicates that the stockpiled soils do not represent grossly contaminated soils from the site. Based on these results, the stockpiled soils do not constitute a hazardous waste.

The remediation plan for the site requires that soil not constituting a hazardous waste but containing over 1,000 mg/kg TPH be landfarmed onsite. TPH results for soil currently stockpiled range from 250 to 3,400 mg/kg, with 8 of 10 samples exceeding 1,000 mg/kg. The average TPH concentration is 1,695 mg/kg.

We recommend that Potlatch and IDEQ consider landspreading rather than landfarming of the stockpiled soil, based on the following reasons:

- ▶ Landspreading is a passive remediation method which decreases petroleum hydrocarbon concentrations in soil through biological action and aeration. Landspreading should be able to attain the 1,000 mg/kg TPH criteria within one to two years. While a work plan and follow-up monitoring would still be required for landspreading, the additional effort of lining, tilling, and fertilization typically required for landfarming would be eliminated.
- ▶ The stockpiled soils are representative of existing surficial soils at the site since they have been excavated from the shallow portions of the recovery trenches. Placement back on the site should therefore not result in additional impact to the site.

Whichever remediation method is selected, activities will be scheduled for next spring because of weather conditions. A liner will be placed over the stockpiled soil to secure it for the winter.

Work for this project was performed, and this letter prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar location, at the time the work was performed. It is intended for the exclusive use of the Potlatch Corporation for specific application to the referenced property.





If additional information or clarification is required, please call Barry Kellems at (206) 324-9530.

Sincerely,

HART CROWSER, INC.

BARRY L. KELLEMS, P.E.
Associate Engineer

BK:bjg
Labdata.ltr

Attachments:

Figure 1 Sampling Location Plan

- A - Certificates of Analysis, October 12, 1994
Laucks Testing Laboratories, Inc.
- B - Certificates of Analysis, October 28, 1994
Laucks Testing Laboratories, Inc.





HARTCROWSER

Calculations

Page 1 of 1

Job No. J-2296-05

Date 11/2/94

Project Avery Landing Site
Calculations for Sampling Location Plan

Made by _____

* SOIL FROM SAMPLE LOCATION USED TO
BACKFILL EXCAVATIONS

ST. JOE RIVER

STONE
PILE

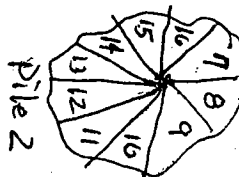
STONE
PILE



Pile 1

(approximately 600 CY)

STONE
PILE



Pile 2

(approximately 1000 CY)

HIGHWAY

PAL 003024

Figure 1

Hart Crowser
J-2296-05

ATTACHMENT A
CERTIFICATES OF ANALYSIS, OCTOBER 12, 1994
LAUCKS TESTING LABORATORIES, INC.



Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

CLIENT: Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, WA 98102

ATTN : Barry Kellems

Work ID : Potlatch - Avery Landing
Taken By : Client
Transported by: Hand Delivered
Type : Soil

Certificate of Analysis

Work Order# : 94-10-086
DATE RECEIVED : 10/03/94
DATE OF REPORT: 10/12/94
CLIENT JOB ID : Job No. J-2296-05

SAMPLE IDENTIFICATION:

Sample		Collection	Sample		Collection
Description		Date	Description		Date
01	SP-1	09/30/94	09	SP-9	09/30/94
02	SP-2	09/30/94	10	SP-10	09/30/94
03	SP-3	09/30/94	11	SP-11	09/30/94
04	SP-4	09/30/94	12	SP-12	09/30/94
05	SP-5	09/30/94	13	SP-13	09/30/94
06	SP-6	09/30/94	14	SP-14	09/30/94
07	SP-7	09/30/94	15	SP-15	09/30/94
08	SP-8	09/30/94	16	SP-16	09/30/94

FLAGGING:

The flag "U" indicates the analyte of interest was not detected, to the limit of detection indicated.

ATTACHMENTS:

Following presentation of sample results, the following appendices are attached to this report:

Appendix A: Method Blank Report
Appendix B: MS/Dup and Duplicate Report
Appendix C: Chain-of-Custody

PAL 003026



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Laucks SINCE 1908

Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

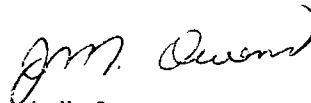
CLIENT : Hart Crowser, Inc.

Certificate of Analysis

Work Order# : 94-10-086

Unless otherwise instructed all samples will be discarded on 11/20/94

Respectfully submitted,
Laucks Testing Laboratories, Inc.


J. M. Owens

PAL 003027



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

CLIENT : Hart Crowser, Inc.

Certificate of Analysis

Work Order # 94-10-086

TESTS PERFORMED AND RESULTS:

Analyte	Units	<u>01</u>	<u>02</u>	<u>03</u>	<u>04</u>
Total Solids	%	93.2	91.4	77.9	96.2
WTPH-418.1	mg/kg DB	770.	730.	870.	860.

Analyte	Units	<u>05</u>	<u>06</u>	<u>07</u>	<u>08</u>
Total Solids	%	93.5	91.2	91.0	86.8
WTPH-418.1	mg/kg DB	490.	680.	1900.	1300.

Analyte	Units	<u>09</u>	<u>10</u>	<u>11</u>	<u>12</u>
Total Solids	%	89.7	92.4	93.1	91.6
WTPH-418.1	mg/kg DB	1200.	250.	500.	2300.

Analyte	Units	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
Total Solids	%	90.7	92.4	90.0	90.0
WTPH-418.1	mg/kg DB	3400.	1900.	2300.	1900.

PAL 003028



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

APPENDIX A

Method Blank Report

PAL 003029



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

Quality Control Report
Method Blanks for Work Order 9410086

Blank Name	Samples Verified	Test Description	Result	Units	Control
					Limit
B100694_OG_S01	1-8	WTPH 418.1	20 U	mg/kg DB	40
B100694_OG_S02	9-16	WTPH 418.1	20 U	mg/kg DB	40

A method blank can validate more than one analyte on more than one work order. The method blanks in this report may validate analytes not determined on this work order, but nonetheless determined in the associated blank.

Because they validate more than one work order, method blank results are not always reported in the same concentration units or to the same detection limits that are used for sample results.

* = blank exceeds control limit

PAL 003030



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

APPENDIX B

MS/Dup and Duplicate Report

PAL 003031



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

Quality Control Report Matrix Spike/Duplicate Report for Work Order 9410086

MS/Dupe Name	Sample Fractions Verified	Sample	Analyte	RPD	MS	Cont. Limits		
					Recov	RPD	LCL	UCL
M100694_OGS01	1-8	9410086-01 WTPH	418.1	1.3	97	26	51	122
M100694_OGS02	9-16	9410086-09 WTPH	418.1	7.0	106	26	51	122

* = Value Exceeds Control Limit

RPD = Relative Percent Difference

LCL = Lower Control Limit

UCL = Upper Control Limit

L = RPD control limit for this analyte is 5x the detection limit. The value appearing in the RPD column is the absolute difference of the duplicates.

-1 for recovery value indicates that recovery could not be calculated

An MS/Duplicate pair can validate the results for more than one work order. For this reason, results for analytes not requested on this work order may appear in this MS/Duplicate report.

PAL 003032



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

Quality Control Report
Duplicate Report for Work Order 9410086

Duplicate Name	Sample Fractions Verified	Sample	Analyte	RPD	Limit
D100494_TSS01	1-10	9410086-01	Total Solids	3.1	30
D100494_TSS02	11-16	9410086-11	Total Solids	0.32	30

* = Value Exceeds Control Limit

RPD = Relative Percent Difference

L = RPD control limit for this analyte is 5x the detection limit. The value appearing in the RPD column is the absolute difference of the duplicates.

-1 for recovery value indicates that recovery could not be calculated

A duplicate pair can validate the results for more than one work order. For this reason, results for analytes not requested on this work order may appear in this duplicate report.

PAL 003033



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Printed on Recycled Paper



Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

APPENDIX C

Chain-of-Custody

PAL 003034



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☐ AMBIENT ☐ REPRESENTATIVE

TESTS TO PERFORM

NO. OF CONTAINERS

OBSERVATIONS,
COMMENTS, SPECIAL
INSTRUCTIONS

15 SOIL SAMPLE
WITH HIGHEST
TPH CONCENTRATIONS
SHALL BE ANALYZED
FOR:

- SW 8270
(Sem-Vol.)
- SW 8080
(PCR only)
- Total RCRA
Metals

15	TOTAL NO. OF CONTAINERS
----	-------------------------

CHAIN OF CUSTODY SEALS?

☐ YES ☐ NO ☐ NA

SHIPPED VIA:

☐ UPS ☐ FED-EX ☐ BUS

☒ HAND ☐ _____

TEMPERATURE

☐ AMBIENT ☐ REPRESENTATIVE**LAUCKS TESTING LABS**

FINAL REPORT CODE:

CHAIN OF CUSTODY RECORD

Lauck's

Testing Laboratories, Inc.

☒ 940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063
☐ 1106 Ledwich Ave., Yakima, WA 98902 (509) 248-4695 FAX 452-1265

NAME:

Hart Crowser

ADDRESS:

ATTENTION:

PROJECT NAME:

POTLATCH - Avery Landing.

PROJECT CONTACT:

BARRY KELLEM S

TELEPHONE/FAX:

324-9530 / 328-5581

JOB/P.O. NO. J-2296-05

SAMPLER (SIGNATURE)

(PRINTED NAME)

James Hest

JAMES HEST

WORK ORDER ID#

9410086

PAGE 2 OF 2

DATE

10/1/94

SUBMITTED AT:

TESTS TO PERFORM

NO. OF CONTAINERS

OBSERVATIONS,
COMMENTS, SPECIAL
INSTRUCTIONS

LAB SA# SAMPLE ID / LOCATION DATE TIME

SP-16

9/30

X

SEE PAGE 1

INSTRUCTIONS

1. USE ONE LINE PER SAMPLE.
2. BE SPECIFIC IN TEST REQUESTS.
3. CHECK OFF TESTS TO BE PERFORMED FOR EACH SAMPLE.

*BILLING INFORMATION, IF DIFFERENT THAN ABOVE

NAME

ADDRESS

ATTN:

CITY, STATE, ZIP

TURNAROUND REQUEST

- ☐ 24-48 HRS (100% SUR)
☐ 5-DAYS (50% SUR)
☒ STD. 10-14 DAYS
☐ OTHER

TOTAL NO. OF CONTAINERS

CHAIN OF CUSTODY SEALS?

☐ YES ☐ NO ☐ NA

SHIPPED VIA:

☐ UPS ☐ FED-EX ☐ BUS☒ HAND ☐

TEMPERATURE

☐ AMBIENT ☐ REPRESENTATIVE

RELINQUISHED BY (SIGN AND PRINT)

DATE
TIME

RECEIVED BY (SIGN AND PRINT)

DATE
TIME

Jim FELDER

10-3-94
0845

Trace Myers

Trace Briggs

8:45a
10-3-94

LAUCKS TESTING LABS

Hart Crowser
J-2296-05

ATTACHMENT B
CERTIFICATES OF ANALYSIS, OCTOBER 28, 1994
LAUCKS TESTING LABORATORIES, INC.



Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

CLIENT: Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, WA 98102

ATTN : Barry Kellems

Work ID : Potlatch - Avery Landing
Taken By : Client
Transported by: Hand Delivered
Type : Soil

Certificate of Analysis

Work Order# : 94-10-462
DATE RECEIVED : 10/03/94
DATE OF REPORT: 10/28/94
CLIENT JOB ID : Job No. J-2296-05

SAMPLE IDENTIFICATION:

	Sample Description	Collection Date
01	SP-13	09/30/94

ATTACHMENTS:

Following presentation of sample results, the following appendices are attached to this report:

Appendix A: Method Blank and Surrogate Recoveries Report
Appendix B: Matrix Spike/Matrix Spike Duplicate Report
Appendix C: Blank Spike Recovery Report

Unless otherwise instructed all samples will be discarded on 12/12/94

Respectfully submitted,
Laucks Testing Laboratories, Inc.


J. M. Owens

PAL 003038



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

USING OUR REPORTS

Laucks uses an electronic Laboratory Information Management System that produces both our reports and invoices. The following information and definitions will help you understand our reports, and we encourage you to call us if your questions are not answered here.

SAMPLE IDENTIFICATION - Sample IDs are recorded as they appear on your sample containers or chain-of-custody documents.

TEST RESULTS - Analyses that result in a single data point are shown in alphabetical order in the body of the report. Tests that yield multiple results are generally reported on separate pages, on a sample-by-sample basis.

MEASUREMENT UNITS - The reporting units are shown to the right of the analyte name. In the event that a different unit was more appropriate to a specific sample, that exception is shown immediately beneath the test result. Units commonly employed are mg/kg (solids) or mg/L (liquids), comparable to parts per million; ug/kg (solids) or ug/L (liquids), comparable to parts per billion; and percent (%).

METHODS OF ANALYSIS - The EPA or Standard Methods method number is shown in parentheses after the analyte name when field size allows; or, for analyses that yield multiple data points, in the header information on the individual report page.

ABBREVIATIONS - Several abbreviations can appear in our reports. The most commonly employed abbreviations are:

- U : The analyte of interest was not detected, to the limit of detection indicated.
- B : The analyte of interest was detected in the method blank associated with the sample, as well as in the sample itself. The B flag is applied without regard to the relative concentrations detected in the blank and sample.
- J : The analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
- T : The flagged values represent the SUM of two co-eluting compounds. The SUM of these two values is shown as though it were a result for each of them. The two figures should not be added together.

PAL 003039



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Laucks ^{Since} 1908

Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

- E : The flagged value was reported from an analysis which exceeded the linear range of the instrument. See additional comments for further discussion of the circumstances. Values so flagged should be considered estimates.
- D : The value reported derives from analysis of a diluted sample or sample extract.
- P : When a dual column GC technique is employed, this flag indicates that test results from the two columns differ by more than 25%. Generally, we report the lower value.
- C : The flagged analyte has been confirmed by GC/MS analysis. The value reported may be derived from either the initial or confirmatory (GC/MS) analysis. See specific report comments for details.
- SDL : Sample Detection Limit. The SDL can vary from sample to sample, depending on sample size, matrix interferences, moisture content and other sample-specific conditions.
- PQL : Practical Quantitation Limit. This limit is drawn from the test method and usually represents the SDL multiplied by a matrix-specific factor.
- CRQL : Client Requested Quantitation Limit, usually the limit of detection specified at your request. Might also be referred to as Contract Required Quantitation Limit.
- DB : Dry Basis. The value reported has been back-calculated to normalize for the moisture content of the sample.
- AR : As-Received. The value has NOT been normalized for moisture.

Other abbreviations, used in special applications, are defined where they appear.

DISPOSAL DATE - Our reports now include the date on which we will dispose of your samples. (In limited instances, we may require that the samples be returned to your custody.) If you wish to have the samples back, or would like to have them stored for a longer period, please notify us before the disposal date.

PAL 003040



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Laucks

Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

CLIENT : Hart Crowser, Inc.

Certificate of Analysis

Work Order # 94-10-462

TESTS PERFORMED AND RESULTS:

Analyte	Units	<u>01</u>
Arsenic (Method 7061)	mg/kg DB	23.
Barium (Method 6010)	mg/kg DB	180.
Cadmium (Method 6010)	mg/kg DB	1. U
Chromium (Method 6010)	mg/kg DB	7.
Lead (Method 6010)	mg/kg DB	38.
Mercury (Method 7471)	mg/kg DB	0.1 U
Selenium (Method 7741)	mg/kg DB	0.6 U
Silver (Method 6010)	mg/kg DB	1. U
Total Solids	%	90.0

PAL 003041



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Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX (206) 767-5063

Chemistry, Microbiology, and Technical Services

REPORT ON SAMPLE: 9410462-01A

Client Sample ID: SP-13

Collection Date : 09/30/94

Date Received : 10/03/94

Date Extracted : 10/13/94

Date Analyzed : 10/21/94

Date Confirmed : 10/21/94

Test Code : 8080AS

Test Method : SW 8080

Extraction Method : SW 3550

Analyte	Result (ug/kg DB)	SDL (ug/kg DB)
Aroclor-1016	37 U	37
Aroclor-1221	74 U	74
Aroclor-1232	37 U	37
Aroclor-1242	37 U	37
Aroclor-1248	37 U	37
Aroclor-1254	37 U	37
Aroclor-1260	37 U	37

Surrogate recovery report for sample 9410462-01A

Surrogate	Percent Recovery	Limits:	
		Min.	Max.
Isodrin	36	20	150
Tetrachloro-m-xylene	44	20	150
Decachlorobiphenyl	60	20	160

* = Indicates that recovery is outside control limits

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REPORT ON SAMPLE: 9410462-01A

Client Sample ID: SP-13

Collection Date : 09/30/94

Date Received : 10/03/94

Date Extracted : 10/13/94

Date Analyzed : 10/17/94

Test Code : LXTCSS

Test Method : SW8270

Extraction Method : SW3550

Analyte	Result (ug/kg DB)	SDL (ug/kg DB)	Analyte	Result (ug/kg DB)	SDL (ug/kg DB)
Phenol	190 U	190	3-Nitroaniline	930 U	930
Aniline	930 U	930	Acenaphthene	690	190
Bis(2-chloroethyl)ether	190 U	190	2,4-Dinitrophenol	1900 U	1900
2-Chlorophenol	190 U	190	4-Nitrophenol	1900 U	1900
1,3-Dichlorobenzene	190 U	190	Dibenzofuran	190 U	190
1,4-Dichlorobenzene	190 U	190	2,4-Dinitrotoluene	370 U	370
Benzyl alcohol	190 U	190	Diethyl phthalate	190 U	190
1,2-Dichlorobenzene	190 U	190	4-Chlorophenyl phenylether	190 U	190
2-Methylphenol	190 U	190	Fluorene	460	190
Bis(2-chloroisopropyl)ether	190 U	190	4-Nitroaniline	370 U	370
4-Methylphenol	190 U	190	4,6-Dinitro-2-methylphenol	1900 U	1900
N-Nitroso-di-n-propylamine	190 U	190	N-Nitrosodiphenylamine	190 U	190
Hexachloroethane	370 U	370	1,2-Diphenylhydrazine	370 U	370
Nitrobenzene	190 U	190	4-Bromophenyl phenylether ..	370 U	370
Isophorone	190 U	190	Hexachlorobenzene	370 U	370
2-Nitrophenol	370 U	370	Pentachlorophenol	1900 U	1900
2,4-Dimethylphenol	190 U	190	Phenanthrene	190 U	190
Benzoic acid	4600 U	4600	Anthracene	190 U	190
Bis(2-chloroethoxy)methane	190 U	190	Carbazole	190 U	190
2,4-Dichlorophenol	370 U	370	Di-n-butyl phthalate	190 U	190
1,2,4-Trichlorobenzene	190 U	190	Fluoranthene	980	190
Naphthalene	190 U	190	Pyrene	740	190
4-Chloroaniline	190 U	190	Benzidine	4600 U	4600
Hexachlorobutadiene	190 U	190	Butylbenzylphthalate	190 U	190
4-Chloro-3-methylphenol	370 U	370	3,3'-Dichlorobenzidine	1900 U	1900
2-Methylnaphthalene	190 U	190	Benzo(a)anthracene	300	190
Hexachlorocyclopentadiene ..	370 U	370	Chrysene	380	190
2,4,6-Trichlorophenol	370 U	370	Bis(2-ethylhexyl)phthalate	190 U	190
2,4,5-Trichlorophenol	370 U	370	Di-n-octyl phthalate	190 U	190
2-Chloronaphthalene	190 U	190	Benzo(b)fluoranthene	240 T	190
2-Nitroaniline	370 U	370	Benzo(k)fluoranthene	240 T	190
Dimethyl phthalate	190 U	190	Benzo(a)pyrene	130 J	190
Acenaphthylene	190 U	190	Indeno(1,2,3-cd)pyrene	74 J	190
2,6-Dinitrotoluene	370 U	370	Dibenzo(a,h)anthracene	190 U	190
			Benzo(g,h,i)perylene	74 J	190

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GC/MS ABN surrogate recovery report for sample 9410462-01A

Surrogate	Percent Recovery	Limits:	
		Min.	Max.
2-Fluorophenol	71	33	115
d5-Phenol	80	45	112
d4-2-Chlorophenol ...	79	41	110
d5-Nitrobenzene	79	38	117
2-Fluorobiphenyl	88	47	124
d4-1,2-Dichlorobenzene	76	43	118
2,4,6-Tribromophenol	76	30	136
d14-p-Terphenyl	76	51	135

* = Surrogate recovery outside control limits

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APPENDIX A

Method Blank and Method Blank Surrogate Recoveries Report

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Quality Control Report Method Blanks for Work Order 9410462

Blank Name	Samples Verified	Test Description	Result	Units	Control Limit
B101994_HY_S01	1	Arsenic by gaseous hydride AA	0.50 U	mg/kg DB	1.0
		Selenium by Gaseous Hydride AA	0.50 U		1.0
B102094_HG_S01	1	Mercury by Cold Vapor	0.10 U	mg/kg DB	0.20
B102494_ICP_S01	1	Silver by ICP	1.0 U	mg/kg DB	2.0
		Barium by ICP	2.0 U		4.0
		Cadmium by ICP	1.0 U		2.0
		Chromium by ICP	1.0 U		2.0
		Lead by ICP	10 U		20
		Arsenic by ICP	20 U		40
		Copper by ICP	1.0 U		2.0
		Nickel by ICP	2.0 U		4.0
		Zinc by ICP	1.0 U		5.0
		Selenium by ICP	20 U		40
		Molybdenum by ICP	1.0 U		2.0
		Potassium by ICP	100 U		200
B101394_GPX_S03	01	Aroclor-1016	33 U	ug/kg	33
		Aroclor-1221	67 U		67
		Aroclor-1232	33 U		33
		Aroclor-1242	33 U		33
		Aroclor-1248	33 U		33
		Aroclor-1254	33 U		33
		Aroclor-1260	33 U		33
B101394_MSV_S01	1	Phenol	33 U	ug/kg	33
		Aniline	170 U		170
		Bis(2-chloroethyl)ether	33 U		33
		2-Chlorophenol	33 U		33
		1,3-Dichlorobenzene	33 U		33
		1,4-Dichlorobenzene	33 U		33
		Benzyl Alcohol	33 U		33
		1,2-Dichlorobenzene	33 U		33

A method blank can validate more than one analyte on more than one work order. The method blanks in this report may validate analytes not determined on this work order, but nonetheless determined in the associated blank.

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* = blank exceeds control limit

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Quality Control Report Method Blanks for Work Order 9410462

Blank Name	Samples Verified	Test Description	Result	Units	Control
					Limit
		2-Methylphenol	33 U		33
		Bis(2-chloroisopropyl)ether	33 U		33
		4-Methylphenol	33 U		33
		N-Nitroso-di-n-propylamine	33 U		33
		Hexachloroethane	67 U		67
		Nitrobenzene	33 U		33
		Isophorone	33 U		33
		2-Nitrophenol	33 U		33
		2,4-Dimethylphenol	33 U		33
		Benzoic Acid	10 J		830
		Bis(2-chloroethoxy)methane	33 U		33
		2,4-Dichlorophenol	67 U		67
		1,2,4-Trichlorobenzene	33 U		33
		Naphthalene	33 U		33
		4-Chloroaniline	33 U		33
		Hexachlorobutadiene	33 U		33
		4-Chloro-3-Methylphenol	67 U		67
		2-Methylnaphthalene	33 U		33
		Hexachlorocyclopentadiene	67 U		67
		2,4,6-Trichlorophenol	67 U		67
		2,4,5-Trichlorophenol	67 U		67
		2-Chloronaphthalene	33 U		33
		2-Nitroaniline	67 U		67
		Dimethyl phthalate	33 U		170
		Acenaphthylene	33 U		33
		2,6-Dinitrotoluene	67 U		67
		3-Nitroaniline	170 U		170
		Acenaphthene	33 U		33
		2,4-Dinitrophenol	330 U		330
		4-Nitrophenol	330 U		330

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* = blank exceeds control limit

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Quality Control Report Method Blanks for Work Order 9410462

Blank Name	Samples Verified	Test Description	Result	Units	Control
					Limit
		Dibenzofuran	33 U		33
		2,4-Dinitrotoluene	67 U		67
		Diethyl phthalate	33 U		170
		4-Chlorophenyl phenylether	33 U		33
		Fluorene	33 U		33
		4-Nitroaniline	67 U		67
		4,6-Dinitro-2-methylphenol	330 U		330
		N-Nitrosodiphenylamine	33 U		33
		1,2-Diphenylhydrazine	67 U		67
		4-Bromophenyl phenyl ether	67 U		67
		Hexachlorobenzene	67 U		67
		Pentachlorophenol	330 U		330
		Phenanthrene	33 U		33
		Anthracene	33 U		33
		Di-n-butyl phthalate	33 U		1700
		Fluoranthene	33 U		33
		Pyrene	33 U		33
		Benzidine	830 U		830
		Butylbenzylphthalate	33 U		170
		3,3'-Dichlorobenzidine	330 U		330
		Benzo(a)anthracene	33 U		33
		Chrysene	33 U		33
		Bis(2-ethylhexyl) phthalate	97		1700
		Di-n-octyl phthalate	33 U		170
		Benzo(b)fluoranthene	33 U		33
		Benzo(k)fluoranthene	33 U		33
		Benzo(a)pyrene	33 U		33
		Indeno(1,2,3-cd)pyrene	33 U		33
		Dibenzo(a,h)anthracene	33 U		33
		Benzo(g,h,i)perylene	33 U		33

A method blank can validate more than one analyte on more than one work order. The method blanks in this report may validate analytes not determined on this work order, but nonetheless determined in the associated blank.

Because they validate more than one work order, method blank results are not always reported in the same concentration units or to the same detection limits that are used for sample results.

* = blank exceeds control limit

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Quality Control Report
Method Blanks for Work Order 9410462

Blank Name	Samples Verified	Test Description	Result	Units	Control Limit
		Carbazole	33	U	33

A method blank can validate more than one analyte on more than one work order. The method blanks in this report may validate analytes not determined on this work order, but nonetheless determined in the associated blank.

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* = blank exceeds control limit

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Quality Control Report
Multi-Component Method Blanks
Surrogate Recoveries for Work Order 9410462

Blank Name	Test Description	Surrogate Compound	Recov	LCL	UCL
B101394_GPX_S03	Organochlorine PCBs in Soil	Isodrin	73	20	150
		Tetrachloro-m-xylene	70	20	150
		Decachlorobiphenyl	94	20	160
B101394_MSV_S01	GC/MS ABNs, LTL surrogate limits	2-Fluorophenol	69	33	115
		d5-Phenol	73	45	112
		d4-2-Chlorophenol	72	41	110
		d5-Nitrobenzene	71	38	117
		2-Fluorobiphenyl	72	47	124
		d4-1,2-Dichlorobenzene	72	43	118
		2,4,6-Tribromophenol	73	30	136
		d14-p-Terphenyl	82	51	135

* = Recovery exceeds control limit

Recov = Percent recovery of surrogate compound

LCL = Lower Control Limit

UCL = Upper Control Limit

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APPENDIX B

Matrix Spike/Matrix Spike Duplicate Report

PAL 003051



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Quality Control Report MS/MSD Report for Work Order 9410462

MS/MSD Name	Sample Fractions Verified	MS/MSD Sample	Analyte	Percent Recovery		Cont. Limits			
				MS	MSD	RPD	LCL	UCL	RPD
K100794_MSVS01	1	9410202-01	Phenol	57	58	3	41	109	28
			2-Chlorophenol	69	69	1	40	106	30
			1,4-Dichlorobenzene	69	63	9	34	107	36
			N-Nitroso-di-n-propylamine	78	80	3	48	118	28
			1,2,4-Trichlorobenzene	72	78	7	40	121	30
			4-Chloro-3-methylphenol	73	88	18	55	120	22
			Acenaphthene	70	76	8	41	122	42
			4-Nitrophenol	72	82	13	23	143	37
			2,4-Dinitrotoluene	74	85	15	32	127	25
			Pentachlorophenol	72	79	9	20	159	43
			Pyrene	88	98	11	25	141	50
K101294_GPXS04	01	9410382-05	Aroclor 1260	87	90	3	20	160	50
K101994_HYS01	1	9410462-01	Arsenic	102	110	7	60	128	30
			Selenium	71	86	18	50	148	30
K102094_HGS01	1	9410476-01	Mercury	65	68	5	65	130	30
K102494_ICPS01	1	9410462-01	Silver	92	86	6	58	132	30
			Arsenic	112	109	3	70	127	30
			Barium	110	95	15	61	127	20
			Cadmium	102	98	4	60	138	21
			Chromium	90	85	6	60	134	30
			Copper	116	122	5	50	150	30
			Nickel	98	94	3	69	124	21
			Lead	113	113	0	50	148	30
			Selenium	106	103	3	67	129	10

* = Value Exceeds Control Limit

RPD = Relative Percent Difference

LCL = Lower Control Limit

UCL = Upper Control Limit

-1 for recovery value indicates that recovery could not be calculated

An MS/MSD pair can validate the results for more than one work order. For this reason, results for analytes not requested on this work order may appear in this MS/MSD report.

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Quality Control Report
MS/MSD Report for Work Order 9410462

MS/MSD Name	Sample Fractions Verified	MS/MSD Sample	Analyte	Percent Recovery		Cont. Limits			
				MS	MSD	RPD	LCL	UCL	RPD
			Zinc	110	128	15	50	150	30
			Molybdenum	104	103	1	50	150	30

* = Value Exceeds Control Limit
RPD = Relative Percent Difference
LCL = Lower Control Limit
UCL = Upper Control Limit
-1 for recovery value indicates that recovery could not be calculated

An MS/MSD pair can validate the results for more than one work order. For this reason, results for analytes not requested on this work order may appear in this MS/MSD report.

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APPENDIX C

Blank Spike Recovery Report

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Quality Control Report Blank Spike Report for Work Order 9410462

Blank Spike Names		Fractions Verified	Analyte Name	Recov	LCL UCL	
Database	Lab Assigned				LCL	UCL
S101394_GPX03	S1013GPXSLC	01	Aroclor 1260	94	20	160
S101994_HYS01	BS1019FAS01	1	Arsenic	93	60	128
			Selenium	100	50	148
S102494_ICPS01	BS1024ICPS01	1	Arsenic	108	70	127
			Barium	106	61	127
			Cadmium	100	60	138
			Chromium	86	60	134
			Copper	108	50	150
			Lead	107	50	148
			Molybdenum	106	50	150
			Nickel	102	69	124
			Selenium	107	67	129
			Silver	98	58	132
			Zinc	104	50	150

* = Value Exceeds Control Limit
LCL = Lower Control Limit
UCL = Upper Control Limit

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XC: M.D. Clausner
: M. McNichols
: W.O. Dameworth
: D.J. McGreer
: J.C. McAdoo
: G.F. Wirsig
: J. Currin

orig: Norm Linton



HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
FAX 206.328.5581
206.324.9530

J-2296-01

October 27, 1989

Potlatch Corporation
P. O. Box 386
St. Maries, Idaho 83861

Attn: Mr. Mike Fish

Re: Site Exploration Report
Avery Landing Site
Avery, Idaho

Dear Mr. Fish:

Hart Crowser, Inc., is pleased to submit this letter report for work completed to date at the Avery Landing site in Avery, Idaho. Our work was completed as outlined in Task 1 of our revised scope of work letter dated June 30, 1989. Additional water and product sampling was completed as discussed in our memorandum to Mr. Mike Fish of Potlatch Corporation dated September 15, 1989.

The scope of Task 1 work involved monitoring well installation, groundwater and free-phase hydrocarbon sampling, and laboratory analysis. Field sampling of

PAL 002413



Potlatch Corporation
October 27, 1989

J-2296-01
Page 2

free-phase hydrocarbons was not completed during our August site visit due to absence of free product in the newly installed wells at that time. Product sampling was completed during our September visit.

The purpose of our field work to date has been to determine the extent of the free-phase hydrocarbon lens and potential groundwater contamination. Water and free product samples were analyzed to determine the level of dissolved hydrocarbons in the groundwater and the suitability of the hydrocarbon material for burning as boiler fuel.

The following report will cover:

- o Monitoring well installation;
- o Groundwater and free-phase hydrocarbon sampling;
- o Laboratory analysis results; and
- o Conclusion and recommendations.

Appendix A contains a discussion of field procedures and well installation logs. Laboratory analysis certificates are presented in Appendix B.



Potlatch Corporation
October 27, 1989

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Installation of Monitoring Wells

Four monitoring wells were installed at the Avery Landing site on August 22 and 23, 1989. The Hart Crowser on-site representative was Bruce McDonald, Senior Staff Engineering Geologist. The subcontracted drillers were Soil Sampling Service of Puyallup, Washington. All drilling was completed with air rotary drilling methods. Monitoring well locations are shown on Figure 1. Well construction data are presented on Figures A-2 through A-5. A key displaying the symbols used to describe well installation logs is presented on Figure A-1.

Groundwater and Free-Phase Hydrocarbon Sampling

Groundwater samples were collected on August 23, 1989, from each of the four monitoring wells installed by Hart Crowser. Monitoring wells HC-1 and HC-3 had no noticeable sheen on purged water. Heavy sheens were observed on purged water from monitoring wells HC-2 and HC-4, a strong odor was noted from HC-4. Free-phase hydrocarbons were not present in any of the new wells at that time. Water samples from HC-1 and HC-3 were submitted to Analytical Resources Incorporated of Seattle, Washington, under contract with Hart Crowser, for analysis of total petroleum hydrocarbons (TPH) and dissolved metals (arsenic, cadmium, chromium, and lead).



Potlatch Corporation
October 27, 1989

J-2296-01
Page 4

A representative from Hart Crowser returned to the Avery Landing site on September 26, 1989. Free-phase hydrocarbons thickness was measured at approximately 4 feet in monitoring well HC-4. Free-phase hydrocarbons were not detected in HC-2 or HC-3. According to trailer park residents living adjacent to the site, monitoring well HC-1 had been removed to repair water and sewer lines.

Groundwater samples were collected from HC-2 and HC-3, purge water from both wells had a slight odor and a light sheen. Samples were analyzed for fuel hydrocarbons using the free-product from HC-4 as a standard. Free-phase hydrocarbons were collected from HC-4 and analyzed for total extraction procedure toxicity (EP Tox) metals, polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PNAs), total halogenated hydrocarbons (TOX), total metals and flashpoint.

All samples were submitted to Analytical Resources Incorporated (ARI) for analysis, some analyses were subcontracted by ARI to Spectrum Laboratories, Inc., of Seattle. Sampling procedures may be found in Appendix A.

Laboratory Analysis Results

Groundwater

Water samples collected from HC-1 and HC-3 on August 23, 1989, were analyzed for TPH (EPA Method 418.1) and dissolved



Potlatch Corporation
October 27, 1989

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Page 5

metals. TPH was nondetectable in HC-1 and HC-3, all metals were also nondetectable except arsenic in HC-3 at 0.009 parts per million (ppm).

Water samples collected September 26, 1989, from HC-2 and HC-3, were analyzed for fuel hydrocarbons by Gas Chromatograph (EPA Method 8015) using the free-phase hydrocarbons from HC-4 as a standard. Fuel hydrocarbons were nondetectable in both samples.

Table 1 summarizes the groundwater analysis results. Laboratory data sheets may be found in Appendix B.

Free-phase Hydrocarbons

Analysis of free-phase hydrocarbons in HC-4 resulted in nondetectable concentrations of all PNA compounds, PCBs, and total halogenated hydrocarbons. All EP Tox metals were also nondetectable except for barium at 0.005 ppm. The flash point of the free-phase hydrocarbons is reported as greater than 210 degrees Fahrenheit. The sample was also analyzed for total metals: cadmium (not detected), chromium (1 ppm), lead (5 ppm), and arsenic (not detected).



Potlatch Corporation
October 27, 1989

Summary

CONCLUSIONS AND RECOMMENDATIONS

The analytical results indicate the following:

- o The groundwater in well HC-1 at the west property line does not appear to be impacted by the petroleum hydrocarbons;
- o The majority of the free-phase petroleum appears to lie beneath the eastern part of the site;
- o The free-phase petroleum is not a characteristic hazardous waste as determined by the EP Toxicity test as defined under federal law;
- o The free-phase petroleum appears suitable for use by burning for fuel in energy recovery boilers;
- o Our prior concept for an interception recovery trench to prevent migration of the petroleum to the St. Joe River still appears appropriate and practical.

Our work has been performed in accordance with generally accepted professional practices in the same or similar localities, related to the nature of the work accomplished at the time the services were performed. It is intended for the exclusive use of Potlatch Corporation, for specific



Potlatch Corporation
October 27, 1989


J-2296-01
Page 7

application to the project site. No other conditions, express or implied, should be understood.

Any questions regarding this report are welcome and should be referred to Alex Tula, Project Manager.

Sincerely,

HART CROWSER, INC.


JERI L. MASSENGILL
Staff Geologist


ALEX TULA
Associate

JLM/AT:cmr/sde
LR22961A/JOBS

Attachments:

Table 1 - Groundwater Analysis Summary
Figure 1 - Site and Exploration Plan
Appendix A - Field Procedures
Figure A-1 - Key to Exploration Logs
Figure A-2 - Well Construction Data
through A-5 for Monitoring Well HC-1 through HC-4
Appendix B - Laboratory Data Sheets
Analytical Resources Incorporated
and Spectra Laboratories, Inc.

Table 1 - Groundwater Analysis Summary

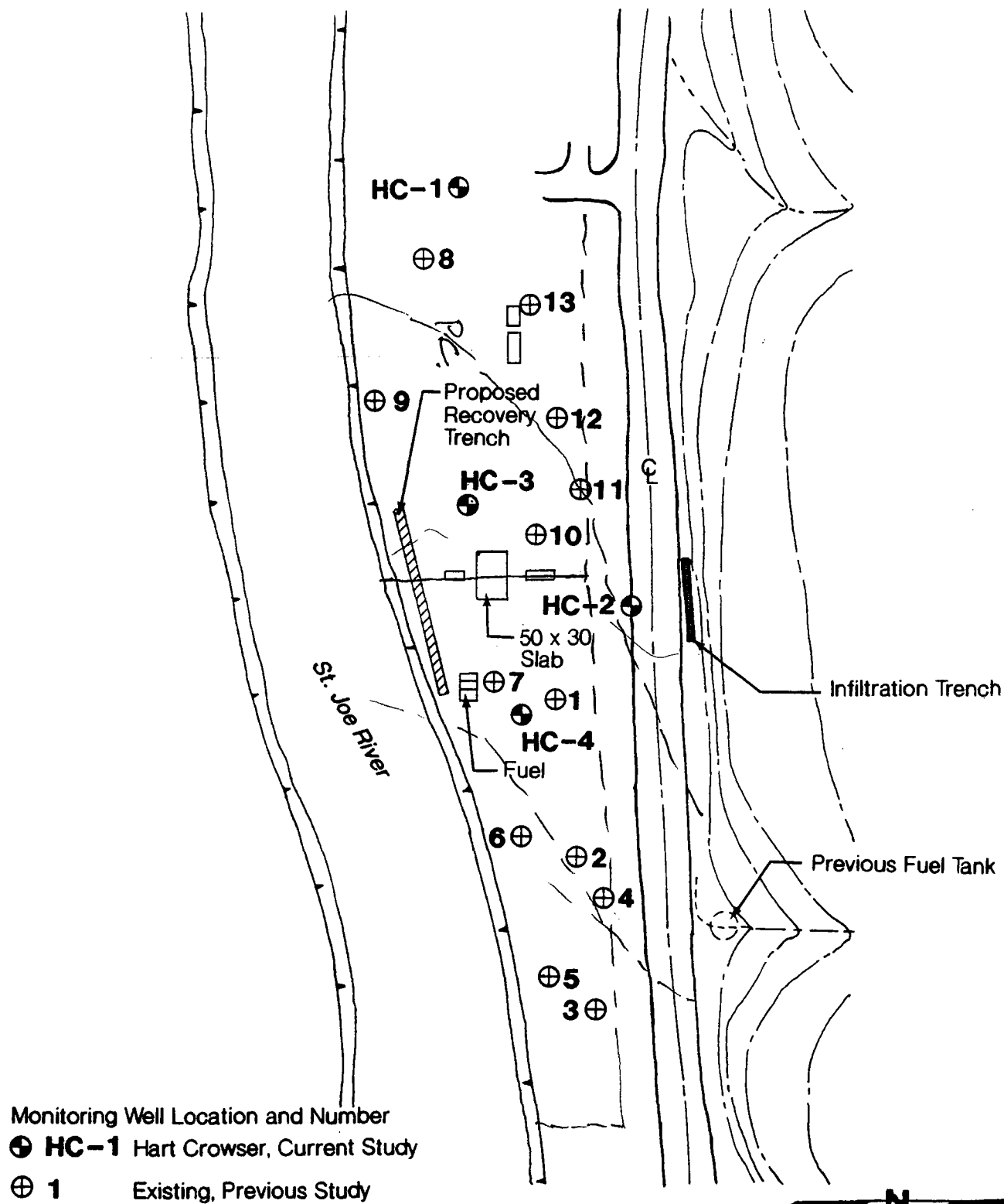
Well	Date Sampled	Analysis Performed	
		TPH	Dissolved Metals
HC-1	August 23, 1989	(EPA Method 418.1)	
		< 10.0	< 0.001 Arsenic
			< 0.002 Cadmium
			< 0.005 Chromium
HC-3	August 23, 1989		< 0.001 Lead
		< 10.0	0.009 Arsenic
			< 0.002 Cadmium
			< 0.005 Chromium
HC-2	September 26, 1989	TPH (EPA Method 8015)	< 0.001 Lead
		< 50.0 *	
HC-3	September 26, 1989	< 50.0 *	

Results reported in parts per million (ppm)

* Analyses performed using free-phase hydrocarbons collected in HC-4 as a standard.

< Not detected at analytical detection limit indicated.

Site and Exploration Plan



Monitoring Well Location and Number
 ● HC-1 Hart Crowser, Current Study
 ⊕ 1 Existing, Previous Study

0 150 300
 Scale in Feet



HARTCROWSER
 J-2296-01 6/89
 Figure 1

Hart, Crowser
J-2296-01

APPENDIX A
FIELD PROCEDURES

PAL 002422

APPENDIX A FIELD PROCEDURES

INTRODUCTION

Field work was completed between August 22, 1989 and September 26, 1989, by Hart Crowser, Inc., and their subcontractor. Hart Crowser's field representatives for this project were Bruce McDonald, Senior Staff Engineering Geologist and Jeri Massengill, Staff Geologist.

Soil Sampling Services, Inc., of Puyallup, Washington, under subcontract to Hart Crowser, completed the drilling and well installation activities on all wells. Groundwater samples were submitted to Analytical Resources, Inc., of Seattle, Washington, for chemical testing.

The program of well installation included the completion of four borings, all of which were completed with air rotary drilling methods using compressed air to lift cuttings from the boring.

The monitoring well locations are presented on Figure 1. Locations were established by hand taping or pacing from existing physical features.

Air Rotary Borings

All borings were completed using percussion bit rotary drilling and air lifted cuttings. Borings were drilled between August 22 and 23, 1989, and completed within a range of depths from 18.5 feet to 23.4 feet below the ground surface. Borings were advanced with a truck-mounted drilling rig using an air-driven percussion bit inside a six-inch inside diameter driven casing. Drilling was accomplished under the continuous observation of a Hart Crowser field representative.

Well Installations

All wells are of 2-inch inside diameter Schedule 40 PVC single well construction and have 10-foot screened sections with 0.020-inch slot size. Wells were installed by lowering the casing to the desired depth. Aqua 8 sand was used to backfill the annulus around the screen to a level 2 feet above the top of the screen. Bentonite chips were used to backfill and grout

the borehole to a depth of 1 foot below the surface. All wells have a concrete surface seal and are protected by either a flush or stickup locking steel monument. Well construction information is presented on Figures A-2 through A-5.

Water Level Measurements

Water level measurements were made for each boring at the time water was first observed during drilling, and immediately prior to placement of the well screen. Subsequent sets of water level measurements were made of all wells installed. These were made before well development and sampling.

Water levels were measured to an accuracy of 0.01 foot using an Olympic Model 300 Electric Well Probe and a decimally graduated tape measure. The tip of the well probe was routinely rinsed with deionized water between wells in order to prevent chemical cross contamination.

Well Development

Development of wells was accomplished by hand bailing. Wells were developed by purging at least four casing volumes of water to remove the fine-grained silt and sand and suspended clay from the well bottom. The wells retained a slight degree of turbidity after development with the exception of HC-3 which remained very turbid.

Groundwater and Free-Phase Hydrocarbon Sampling for Chemical Analysis

Groundwater samples were obtained from the 4 monitoring wells on August 23, 1989. Free-phase hydrocarbon from HC-4 and groundwater samples from HC-2 and HC-3 were collected on September 26, 1989.

Groundwater samples from monitoring wells were obtained using a stainless steel or teflon bailer. To obtain representative groundwater samples, at least 3 casing volumes of water were purged prior to actual sampling. Water was then poured from the bailer into appropriate laboratory provided bottles.

Free-phase hydrocarbons were detected in monitoring well HC-4 during our September 26, 1989, visit. HC-4 was not purged prior to sampling; in this case, the free-phase hydrocarbons were poured from a plastic disposable bailer into a laboratory provided bottle.

All samples were labeled and placed on an ice insulated cooler. Sample custody was documented at all times.

Decontamination Procedures

Drilling, sampling, and testing equipment were routinely decontaminated in the field. Decontamination of drilling equipment between explorations consisted of steam cleaning followed by a tap water rinse. PVC components (screen, riser, and end caps) used in well construction were also steam cleaned and rinsed in tap water prior to installation.

The well probe and sampling bailers were decontaminated with a wash of distilled water and detergent followed by two distilled water rinses.

Chain of Custody

All sample jars were prelabeled with well number, job number, date, and the samplers initials. Chain of custody forms were filled out, signed, and countersigned for transfers of samples from the possession of Hart Crowser field representatives to personnel at Analytical Resources, Inc. Chain of custody documents are maintained in the QA/QC records of Hart Crowser.

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Density/consistency, moisture, color, minor constituents, MAJOR CONSTITUENT, additional remarks.

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits is estimated based on visual observation and is presented parenthetically on the test pit logs.

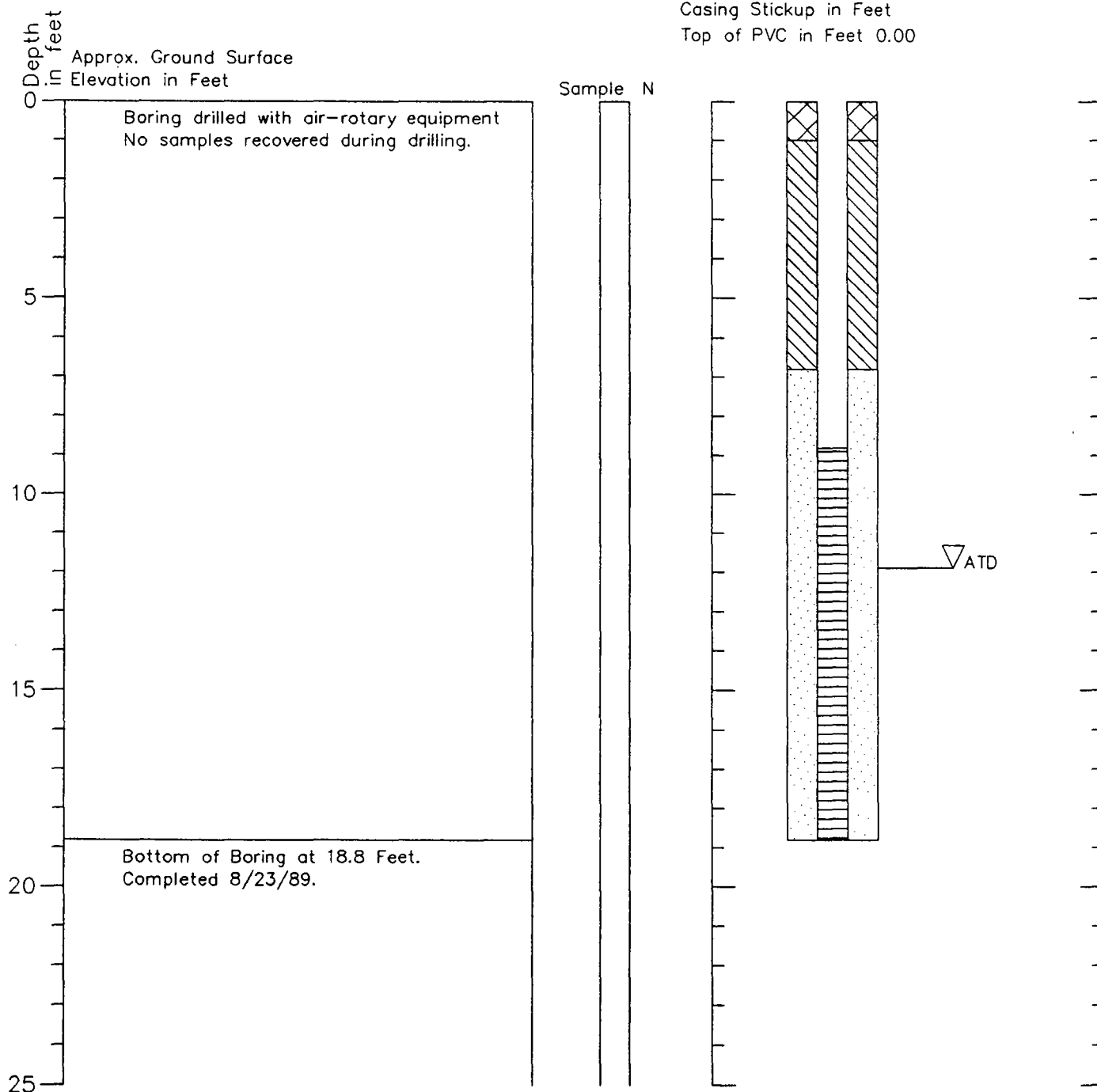
PAL 002426

Boring Log and Construction Data for Monitoring Well HC-1

Geologic Log

Monitoring Well Design

Casing Stickup in Feet
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



HARTCROWSER

J-2296-01

8/89

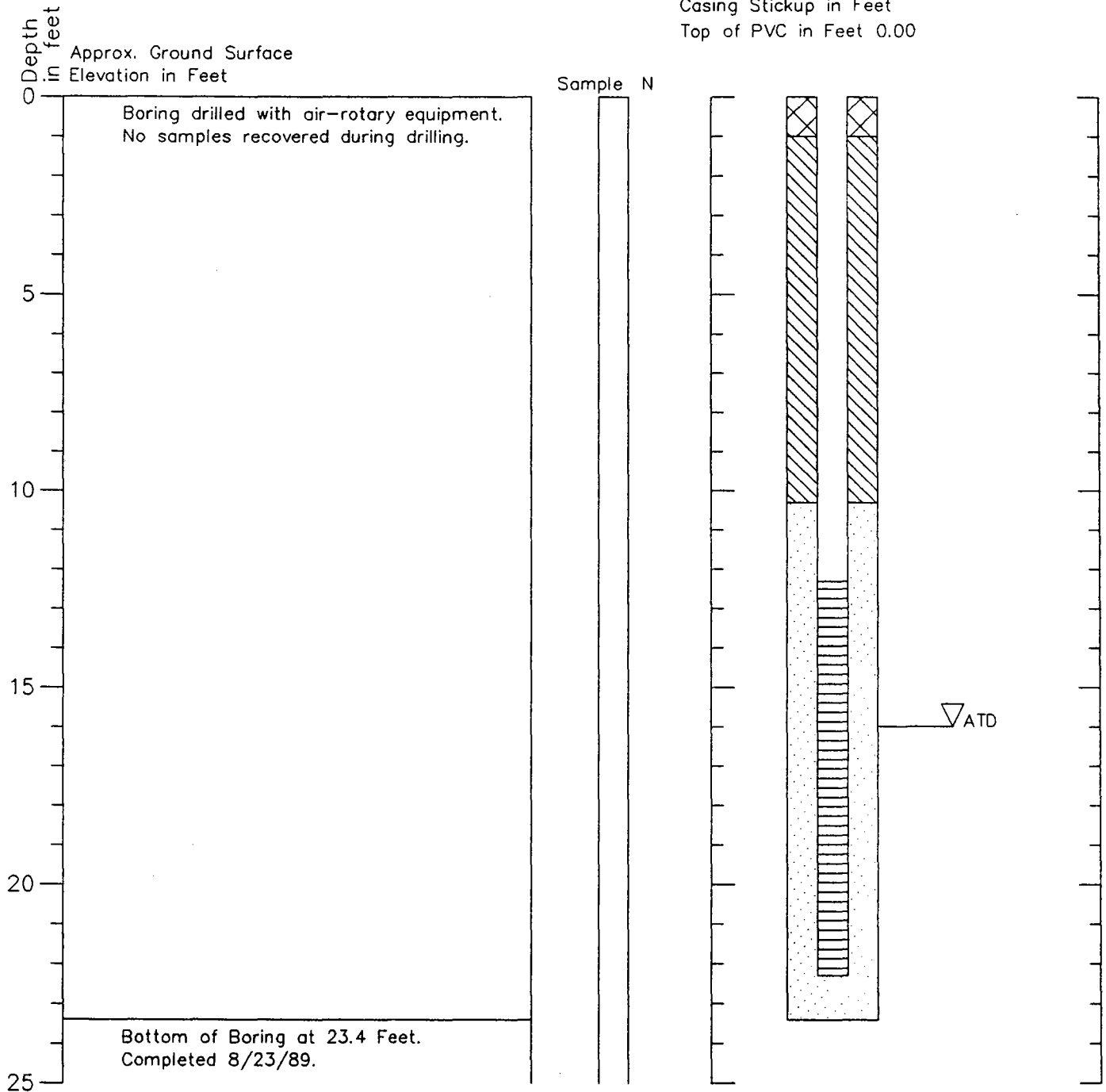
Figure A-2

Boring Log and Construction Data for Monitoring Well HC-2

Geologic Log

Monitoring Well Design

Casing Stickup in Feet
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER
J-2296-01 8/89

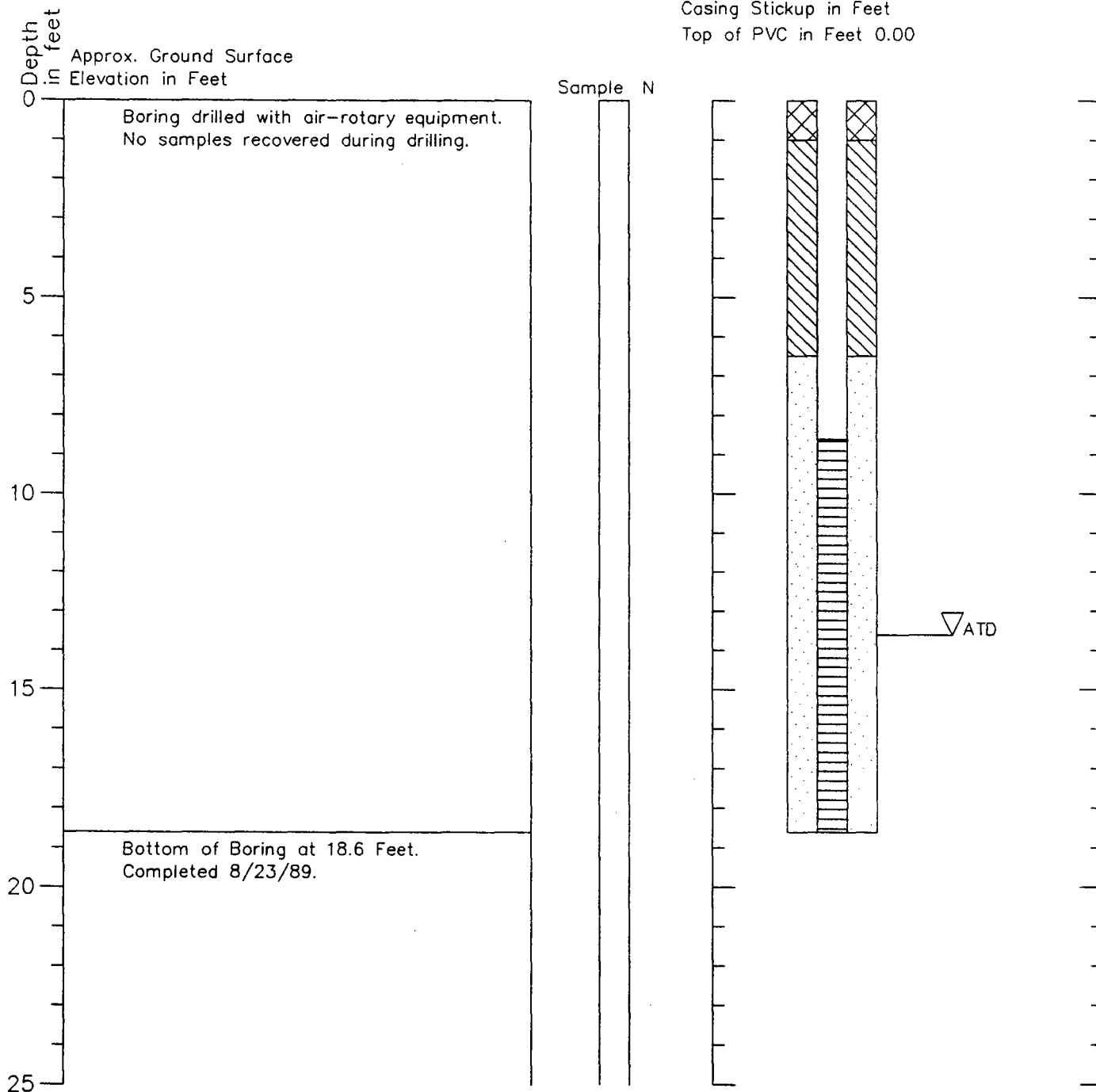
Figure A-3

Boring Log and Construction Data for Monitoring Well HC-3

Geologic Log

Monitoring Well Design

Casing Stickup in Feet
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



HARTCROWSER

J-2296-01

8/89

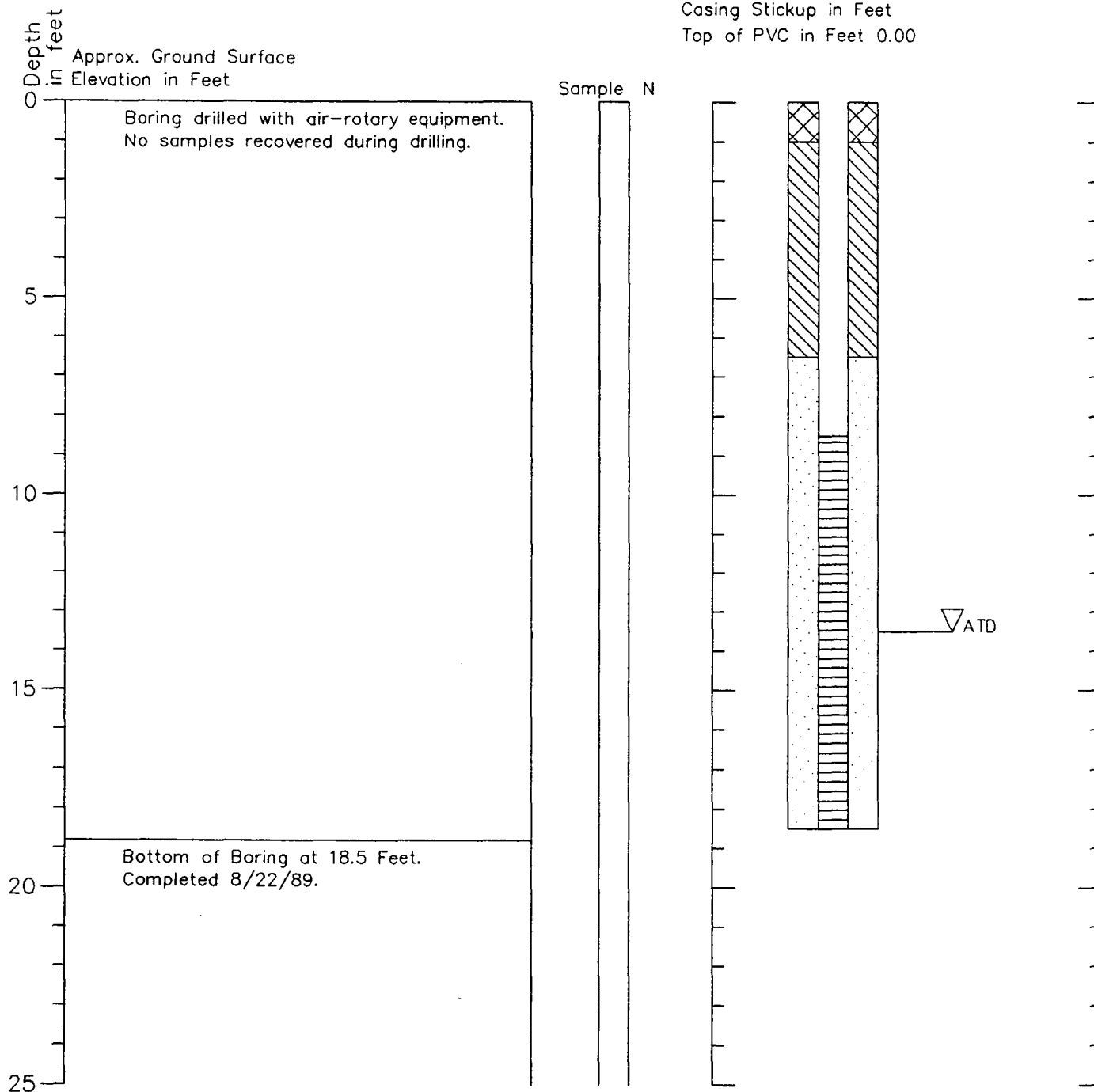
Figure A-4

Boring Log and Construction Data for Monitoring Well HC-4

Geologic Log

Monitoring Well Design

Casing Stickup in Feet
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



HARTCROWSER

J-2296-01

8/89

Figure A-5

Hart Crowser
J-2296-01

APPENDIX B
LABORATORY DATA SHEETS
ANALYTICAL RESOURCES INCORPORATED
AND SPECTRA LABORATORIES, INC.

PAL 002431



**ANALYTICAL
RESOURCES
INCORPORATED**

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

**TOTAL PETROLEUM HYDROCARBONS by IR Scan
Modified EPA Method 418.1**

Matrix: Water

Project: **Potlatch Corp.**
#J-2296-01

Data Release Authorized

QC Report No: 3540-Hart Crowser
VTSR: 08/28/89

Data Prepared: 08/29/89 - MAC:C C.G.

Date of Analysis: 08/29/89
Date Prepared: 08/29/89

	Lab ID	Client Sample ID	Dilution Factor	TPH (ppm)
1	3540 MB	Method Blank	1	10 U
2	3540 A	HC-1	1	10 U
3	3540 B	HC-3	1	10 U

Values reported in ppm (mg/Kg) based on wet weight of sample

U Indicates compound was analyzed for but not detected at the given
detection limit.

ANALYTICAL RESOURCES, INC.
Inorganic Laboratory Data Report
09/05/89
10:58:34

Client: HART CROWSER
Contact: SCOTT FERRIS
Project: POTLATCH CORP
ID number: HC-1
Description:
Sampled: / /
Matrix: WATER

ARI job number: 3540
ARI sample number: A

Released by: NRW

A N A L Y T I C A L R E S U L T S

CAS Number	Analyte	Concentration	C	Prep	M
7440-38-2	Arsenic	0.001 mg/L	L	DMN	GFA
7440-43-9	Cadmium	0.002 mg/L	L	DMN	ICP
7440-47-3	Chromium	0.005 mg/L	L	DMN	ICP
7439-92-1	Lead	0.001 mg/L	L	DMN	GFA

ANALYTICAL RESOURCES, INC.
Inorganic Laboratory Data Report
09/05/89
10:58:41

Client: HART CROWSER
Contact: SCOTT FERRIS
Project: POTLATCH CORP
ID number: HC-3
Description:
Sampled: / /
Matrix: WATER

ARI job number: 3540
ARI sample number: B

Released by: NRW

A N A L Y T I C A L R E S U L T S

CAS Number	Analyte	Concentration	C	Prep	M
7440-38-2	Arsenic	0.009 mg/L		DMN	GFA
7440-43-9	Cadmium	0.002 mg/L	L	DMN	ICP
7440-47-3	Chromium	0.005 mg/L	L	DMN	ICP
7439-92-1	Lead	0.001 mg/L	L	DMN	GFA



**ANALYTICAL
RESOURCES
INCORPORATED**

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, Wa 98109-5187
(206) 621-6490

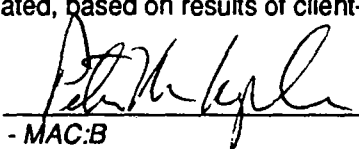
**DATA REPORT SHEET
Product Analysis**

**CLIENT: Hart Crowser
ARI JOB #: 284503747
VTSR: 09/28/89
PROJECT: 2296-02
Avery Landing**

<u>ARI SAMPLE #</u>	<u>CLIENT SAMPLE #</u>	<u>Product (ppm)</u>
3747 A	MW-2/S-1	50 UJ
3747 B	MW3/S-1	50 UJ
3747 MB	Method Blank	50 UJ

DATA QUALIFIER

- U Indicates compound analyzed for but not detected at the given detection limit.
- J Indicates value is estimated, based on results of client-supplied product which was used for a standard.

Date Release Authorized: 
Report prepared 10/27/89 - MAC:B

PAL 002435



SPECTRA Laboratories, Inc.

5013 Pacific Hwy. E. #12 • Tacoma, WA 98424 • (206) 922-5120

October 5, 1989

Analytical Resources Inc.
333 Ninth Ave North
Seattle, WA 98109-5187
Customer #81570

Sample ID: MW 4/S-1
ARI #3747-C
Spectra #26941

Attn: Catherine Greer

Total halogens, ppm	<1
Flash Point, PMCC °F	>210

EP Toxicity Metals, mg/l

Lead	(Pb)	<0.01
Chromium	(Cr)	<0.002
Silver	(Ag)	<0.004
Barium	(Ba)	0.005
Cadmium	(Cd)	<0.005
Arsenic	(As)	<0.08
Mercury	(Hg)	<0.02
Selenium	(Se)	<0.1

SPECTRA LABORATORIES, INC.


Steven G. Hibbs, Chemist

PAL 002436



**ANALYTICAL
RESOURCES
INCORPORATED**

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PCB Analysis

Matrix: Oil

QC Report: 3747-Hart Crowser

Project No: 2296-02/Avery Landing

Date Received: 09/28/89

Data Release Authorized *Peter M. Kyle*
Report prepared: 10/04/89 - MAC:C

Sulfur Cleaned: NO
Alumina Cleaned: NO
GPC Cleaned: NO

Reported in ppm (mg/Kg)

Sample #:	Method Blk.	MW-4/S-1
ARI Lab ID:	3747MB	3747C
Date Extracted:	10/03/89	10/03/89
Date Analyzed:	10/03/89	10/03/89
Sample Weight:	5.0 g	5.04 g
Dilution:	1:40	1:40
1016/1242	1.0 U	2.0 U
1248	1.0 U	2.0 U
1254	1.0 U	2.0 U
1260	1.0 U	2.0 U
DBC %Rec	55%	78%

Data Reporting Qualifiers

U Indicates compound was analyzed for
but not detected at the given detection
limit.

NR Indicates compound not reported due
to chromatographic interference
and/or dilution.



**ANALYTICAL
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INCORPORATED**

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET- PNA by GC-FID

Lab Sample ID: 3747 C
Matrix: Product

Sample No: MW-4/S-1
QC Report No: 3747-Hart Crowser
VTSR: 09/28/89

Date Extracted: 10/03/89
Date Analyzed: 10/05/89
Conc/Dil Factor: 1:100
Dry Weight: 1.24 grams

Data Release Authorized:

Peter M. Lynch

PORT PREPARED: MAC:C - C.G.. (10/05/89)

Reported in ppm(mg/kg)

CAS Number		mg/kg
91-20-3	Naphthalene	1000 U
208-96-8	Acenaphthylene	1300 U
83-32-9	Acenaphthene	1400 U
86-73-7	Fluorene	1300 U
85-01-8	Phenanthrene	1200 U
120-12-7	Anthracene	1000 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
56-55-3	Benzo(a)Anthracene	200 U
218-01-9	Chrysene	200 U
205-99-2	Benzo(b)Fluoranthene &	
207-08-9	Benzo(k)Fluoranthene	300 U
50-32-8	Benzo(a)Pyrene	300 U
193-39-5	Indeno(1,2,3-cd)Pyrene	500 U
53-70-3	Dibenz(a,h)Anthracene	500 U
191-24-2	Benzo(ghi)Perylene	600 U

SURROGATE PERCENT RECOVERY

Terphenyl	103%
-----------	------

Data Qualifiers

- U Indicates compound was analyzed for
but not detected at the given detection limit.
- NA Indicates compound not analyzed.
- NR Indicates compound not reported due to
dilution and/or matrix interference.

PAL 002438



**ANALYTICAL
RESOURCES
INCORPORATED**

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET- PNA by GC-FID

Lab Sample ID: 1003MB
Matrix: Product

Sample No: Method Blank
QC Report No: 3747-Hart Crowser
VTSR: 09/28/89

Date Extracted: 10/03/89
Date Analyzed: 10/05/89
Conc/Dil Factor: 1:10
Dry Weight: 4.0 grams

Data Release Authorized: *Peter M. Hughes*

PORT PREPARED: MAC:C - C.G.. (10/05/89)

Reported in ppm(mg/kg)

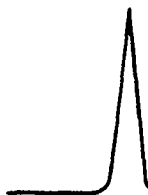
CAS Number		mg/kg
91-20-3	Naphthalene	2.0 U
208-96-8	Acenaphthylene	2.0 U
83-32-9	Acenaphthene	2.0 U
86-73-7	Fluorene	2.0 U
85-01-8	Phenanthrene	2.0 U
120-12-7	Anthracene	2.0 U
206-44-0	Fluoranthene	2.0 U
129-00-0	Pyrene	2.0 U
56-55-3	Benzo(a)Anthracene	2.0 U
218-01-9	Chrysene	2.0 U
205-99-2	Benzo(b)Fluoranthene &	
207-08-9	Benzo(k)Fluoranthene	3.0 U
50-32-8	Benzo(a)Pyrene	3.0 U
193-39-5	Indeno(1,2,3-cd)Pyrene	5.0 U
53-70-3	Dibenz(a,h)Anthracene	5.0 U
191-24-2	Benzo(ghi)Perylene	6.0 U

SURROGATE PERCENT RECOVERY

Terphenyl	109%
-----------	------

Data Qualifiers

- U Indicates compound was analyzed for
but not detected at the given detection limit.
- NA Indicates compound not analyzed.
- NR Indicates compound not reported due to
dilution and/or matrix interference.



SPECTRA Laboratories, Inc.

5013 Pacific Hwy. E. #12 • Tacoma, WA 98424 • (206) 922-5120

October 17, 1989

Analytical Resources Inc.
333 Ninth Avenue North
Seattle, WA 98109-5187
Customer #81570

Sample ID: MW-4/5-1 3747-C
Desc: Oil
Spectra #27474
RUSH

Attn: Dave Mitchell

Cadmium	(Cd), ppm	<1
Chromium	(Cr), ppm	1
Lead	(Pb), ppm	5
Arsenic	(As), ppm	<1

SPECTRA LABORATORIES, INC.


Steven G. Hibbs, Chemist

PAL 002440

PRELIMINARY ASSESSMENT
PA

AVERY RAILROAD DUMP AND ROUNDHOUSE
IDD 984666313
T45N R5E NE 1/4 SEC. 16
AVERY, IDAHO 83802

May 9, 1991

Prepared for: U.S. Environmental Protection Agency
Region 10
Superfund Program Management Section
Seattle, Washington 98101

Prepared by: Idaho Department of Environmental Quality
1410 N. Hilton
Boise, Idaho 83706-1253

Executive Summary

The abandoned Avery Railroad Dump and Roundhouse facility is located in Avery, Idaho on the north bank of the St. Joe River. The natural setting consists of a narrow river valley confined by very steep, forested mountains. The site served as a switching station and light maintenance facility for the Chicago, Milwaukee, St. Paul and Pacific Railroad Company from 1909 to 1977. The site is now owned and managed by Potlatch Corporation.

Presently, a portion of the riverbank on the southern boundary of the site is covered by a tarry black substance, and an oily seep can be observed in the river in this same area.

A two-phase environmental assessment of the site was completed in the fall of 1989 by Hart Crowser for Potlatch. Initially, a sample was collected from a free-floating oily layer in monitoring well MW-11, an existing well from a previous study. The sample was analyzed for chlorinated volatiles, cadmium, chromium, lead and PCBs. Chromium, lead and PCBs were detected in the sample leading Hart Crowser to characterize the floating layer as a waste oil. In the second phase of this study, the installation of four monitoring wells and subsequent sampling of these wells, and chemical analyses of both groundwater and the waste oil from these wells were completed. The ground water samples were analyzed for total petroleum hydrocarbons (TPH) and dissolved metals (arsenic, cadmium, chromium, and lead). The waste oils were analyzed for EP Tox metals, PCBs, PNAs, total halogenated hydrocarbons, and total metals (cadmium, chromium, lead and arsenic).

Chemical analyses of these ground water samples did not detect any TPH. Of the dissolved metals only arsenic was detected (0.009 ppm). Analyses of the waste oil found in the wells indicated no detectable concentrations of PNA compounds, PCBs and total halogenated compounds. Of the EP tox metals only barium was detected (0.005 ppm). Total chromium and total lead were detected at 1ppm and 5ppm, respectively. These results are inconclusive, however, as detection limits for the PCBs were higher than the reported values from the earlier phase of the study. PNAs were not detected, but detection levels for these compounds were high, ranging from 200 to 1400 ppm and did not provide meaningful results for these parameters.

Preliminary Assessment
of
Avery Railroad Dump & Roundhouse
IDD984666313
Avery, Idaho 83802

1991

Prepared for : U.S. Environmental Protection Agency
Region 10
Superfund Program Management Section
Seattle, WA 98101

Prepared by: Idaho Division of Environmental Quality
1410 N. Hilton, Suite 101
Boise, ID 83706-1253

Avery Railroad Dump & Roundhouse

Introduction

Pursuant to Cooperative Agreement V000409-01 between the U.S. Environmental Protection Agency (EPA) and the Idaho Division of Environmental Quality (DEQ), the DEQ conducted a Preliminary Assessment (P.A.) at the site known as Avery Railroad Dump and Roundhouse.

PA's are intended generally to identify potential hazards at sites, to identify sites that may require immediate action where a substantial danger to public health or environment exists, and to establish priorities for sites requiring further investigations (Site Inspections) under the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA), possibly leading to placement of the site on the National Priorities List (NPL). The

PA is based on readily available information about the site including some limited field reconnaissance and investigation and is not a full investigation or characterization of the site.

The Avery Railroad Dump and Roundhouse PA is conducted to identify potential public health and environmental threats related to the site. The PA is based on data derived from the sources listed in Section I.

A. General Site Data

Site Name: Avery Railroad Dump and Roundhouse
Location: Avery, Idaho
Owner: Potlatch Corporation
PO Box 386
St. Maries, Idaho 83861
Operator: Site is not operational
Contact: Mike Fish
Potlatch Corporation
PO Box 386
St. Maries, Idaho 83861
(208) 245-2585

B. Site Description

The site is the former location of the Chicago, Milwaukee, St. Paul and Pacific Railroad Company's roundhouse, turntable, and maintenance facilities in Avery (Township 45 N, Range 5 E Sections 15 and 16 - Attachment 2). The site comprises approximately 7 acres. The railroad facilities appear to have consisted of (from a plat dated October 5, 1915 - Attachment 3) a turntable, a

roundhouse (consisting of a machine shop, fan house and engine house), a boiler house, various store houses, a coal dock, an oil house, oil tanks (including a 500,000 gallon fuel oil tank), oil "sinks", various "drains", and a pump house.

The closest permanent structures to the site are the various homes and buildings comprising the town of Avery (on both sides of the St. Joe River). The nearest permanently occupied building is located 600 feet west of the site. The majority of the buildings comprising Avery are spread along both the north and south banks of the St. Joe River for approximately one mile upstream (east) and one-quarter mile downstream (west). The site itself is currently used for a staging and parking area by Potlatch. Potlatch has also used the site for temporary storage of logs. There are currently two temporary "camp" buildings (approximately 10' x 20') on site. The western side of the facility, immediately north of where the St. Joe River curves to the northwest, has been leased in the past to contractors needing to locate trailers for workers. The same area may again be leased for the upcoming summer construction season. A trailer park was located here from May through October, 1990. The area near the site is mountainous, with steep forested slopes rising immediately on both the north and south sides of the town. The site is bordered on the south in its entirety by the St. Joe River (1). The north side is bordered by the newly constructed St. Joseph River road and the steep south facing slope of Avery Hill. The east and west sides of the site both narrow to

a point bordered on the south by the St. Joe River and on the north by the slope of Avery Hill with only the road right-of-way separating the river and the slope. (1, Attachment 1)

C. Ownership Information

Potlatch Corporation obtained ownership of the approximate western two-thirds (5 acres) of the Avery site in 1980. The eastern third, including an area of riverbank contaminated by the oil seep, is owned by a David Thierault who inherited this property from his grandfather, Harold Thierault. The strip of land comprising the northern boundary of the site was sold by the Thierault Estate to the Federal Highway Administration in 1986 for construction of the St. Joe River Road (10). Prior to 1980, the site was owned by the Chicago, Milwaukee, St. Paul and Pacific Railroad ("Milwaukee Road"). The railroad operated the rail yard from 1909 till approximately 1977. The Milwaukee Road was in reorganization under bankruptcy from 1977 to 1985 and afterwards emerged as the CMC Real Estate Corporation. The CMC Real Estate Corporation was merged into the Chicago Milwaukee Corporation (CMC) in 1989, and has since undergone further corporate restructuring into Heartland Partners and CMC Heartland, collectively known as "Heartland" (10).

D. Hazardous Substance Activities and Potential Problems

An area of concern is associated with a 500,000 gallon fuel oil tank, formerly located in a gully on the north side of the site, to the northeast of the turntable and roundhouse complex. The tank

common practice in the past at similar railroad facilities around the country containing both a turntable and roundhouse. However, Chet Johnson, an Avery resident and retired railroad worker, stated otherwise. Mr. Johnson worked on the Chicago, Milwaukee, St. Paul and Pacific Railroad in both Montana and Idaho (Avery) for a total of nearly 30 years. He stated that most of the heavy maintenance was conducted at Deer Lodge, Montana. The facilities in Avery conducted only minor repairs and he could not recall the use of any degreasing agents or their disposal (5). No chemical analyses completed to date have revealed any halogenated volatile compounds commonly found in solvents. The only volatile compounds detected are the BETX (benzene, ethylbenzene, toluene, xylenes) petroleum constituent (Attachment 5).

Transformer Oils

Because Avery was the end of the electric line for trains heading east, a substation is reported by Mr. Stranohon of the United States Forest Service (USFS) to have been located near the Avery town well located approximately three-fourths of a mile east of the site near the confluence of Avery Creek and the St. Joe River (1, Attachment 1). This substation included stored transformers and tanks or vaults for storing transformer oil. Whether or not these were PCB containing oils has not been determined (1). Mr. Johnson stated that he recalled transformers were stored at various locations on-site, but could not remember what happened to them or where exactly they had been stored relative to the facilities shown

construction crews and their trailers utilize the area just west of the site. Then a maximum of 20 people may utilize this well during the construction season. One well serves the Log Cabin Inn and Motel located directly across from the site on the south side of the river. The well serves one residence and is used by the restaurant, bar and motel (1 apartment, 4 rooms). There is also space for eight trailers on the premises. These are occupied only seasonally. A USFS well is located above the Avery Water and Sewer well, on the divide between Avery Creek and Fortynine Gulch (Attachment 1). This well is utilized seasonally, with no use in the winter and a maximum of approximately 10 USFS workers in the summer. The Avery school well, located across the river and southeast of the site, serves 21 residents, in addition to the children and personnel at the school which at present totals 29. The sixth well is located approximately one and one-quarter miles west of the site near the confluence of Fishhook Creek and the St. Joe River. This well supplies domestic water for a residence at that location (4). For the required distances from the site, the wells and estimated associated populations are as follows:

<u>Distance from Site (Miles)</u>	<u># of wells</u>	<u>Estimated Population (Includes seasonal range)</u>
0 - 1/4	2	8 - 48
1/4 - 1/2	0	
1/2 - 1	2	86 - 125
1 - 2	2	4 - 12
2 - 3	0	
<u>3 - 4</u>	<u>0</u>	
Total	6	98 - 185

The average annual precipitation for the area, as measured at St. Maries downriver, is 30.1 inches (3). The annual free water surface evaporation is 28 inches (11), which results in an annual net precipitation of 2.1 inches. However, the evaporation measurement reflects a recording period from May through October, the driest period of the year. Although rain is common in the summer, the highest precipitation is during the winter months when evaporation is minimal, thus resulting in increased infiltration or actual net precipitation.

No wellhead protection areas have been designated.

Surface Water

There are no quantitatively documented known releases to surface water other than the oily substance described in

Section D. The presence of chromium, lead, and PCBs in the sample obtained from monitoring well MW-11 raises questions as to the presence of waste oils at the site and in the river (6).

The main contaminants of concern would be PCBs and heavy metals entrained in an oily base, possibly waste oil.

There are no obvious overland surface migration paths at the site for contamination to enter surface waters and no current operations at the site that could serve as a source for contamination to surface waters (1). The same groundwater flow that is transporting product into the St. Joe River could be capable of contributing other contaminants, such as those detected in the floating layer (PCB, lead, chromium) to the river. The site itself lies adjacent to the St. Joe River in the east-west direction for approximately 1500 feet (Attachments 1, 2). There are no records to indicate whether or not the site lies within the St. Joe River flood plain for any particular event (25 year, etc.). The Shoshone County Zoning and Planning Department has no flood plain data for the upper St. Joe above Calder (9). However, a rain event in November, 1990 created one of the highest flows (higher than peak spring runoff) in recent memory according to long time Avery residents. The town and

specifically the site remained well above the high water mark (8, 9).

The average monthly flow for the St. Joe River as measured at Calder (30 miles downstream) varies from an average September low flow of 500 cubic feet per second (cfs) to an average May high flow of 8560 cfs. The average annual flow is 2408 cfs (3).

There is no known use of the river for drinking water immediately downstream of Avery. Calder (30 miles downstream) does not utilize the river for potable water and neither does St. Maries, another 20 miles downstream beyond Calder (8).

The St. Joe River is popular for sport fisheries and is classified as a "Special Resource Water" by the State of Idaho. Based on a 1990 fish count conducted between Calder and Avery, the fish production in pounds per mile of stream in the 15 miles below Avery is estimated to be 710 lbs/mile. This is based on an average of 947 fish/mile at 3/4 lb. per fish (approximately 10-12 inches). The species counted include cutthroat and rainbow trout and whitefish. No wetlands are indicated in the 15 miles below Avery (1, Attachment 1).

Soils

A release of hazardous substances to surface soils has not been documented. Only groundwater and product samples have been subjected to chemical analyses (Attachment 4). However, the presence of PCBs and heavy metals in the waste oil recovered from beneath the site suggest the possibility of soil contamination through the dumping or spilling of waste oil on the site. Some dark gray staining of soils was observed during the October 1990 site visit in the vicinity of the small camp buildings located in the middle of the site, and west of those buildings near the then present temporary trailers. Some remnant patches of asphalt were observed at the site beneath the more recently laid gravel.

There have been, and will again be during the summer construction season, temporary populations (in trailers) adjacent to the site as described in section B. However, no schools or day care centers are located near the site. The nearest regularly (year-long) occupied structure is a residence owned by a Mr. Bernie Benson, located approximately 200 yards west of the site. There is also the Log Cabin Inn & Motel located just to the south-southeast, across the river, again approximately 200 yards distance from the site (1).

Access by humans and animals to the site is both possible and very easy. There are no fences or other barriers present at the site.

H. Summary

This site is a former switching station and apparently "light" maintenance facility for the railroad. The facility operated from 1909 to the late 1970s. No records exist that document hazardous substance releases to groundwater, surface water, or soils, with the exception of relatively recent chemical analyses indicating groundwater contamination by petroleum constituents, and oily wastes contaminated with both lead, chromium and PCBs. The hazardous substances of concern are solvents for degreasing engine parts, transformer cooling oils containing PCBs, and waste oils. Major presumed routes of exposure which will require further analysis include groundwater, surface water, and soil. The surface water of concern is the St. Joe River flowing adjacent to the site. Bioaccumulation of PCBs in aquatic species which are part of the human food chain should be further evaluated. Possible contamination of this resource may have occurred mainly through the groundwater to surface water pathway.

RECOMMENDATIONS

It is recommended that a site inspection of this facility be conducted in order to collect data necessary to complete the Hazard Ranking System (HRS) evaluation for this site. The following recommendations are to assist EPA in determining the eligibility for placement on the National Priorities List (NPL).

1. Undertake a sampling effort at visually impacted areas of the site to further document the presence of CERCLA regulated substances in soil, surface water, groundwater and air through all HRS exposure pathways.
2. To date one sample from MW-11 indicates that CERCLA regulated substances have been released to the environment. Presently, the source for these contaminants is unknown. The source(s) will need to be identified if additional waste quantity is needed to enhance the pathway scores.
3. Given that the floating oil layer on the groundwater has been documented as being contaminated by PCBs, lead, and chromium, we feel sampling of the nearest water supply wells should be conducted to determine if the release is impacting human health. This will be necessary to document a threat to the human target population.

8. Personal communication with Steve Tanner, Water Quality Compliance Officer, Coeur D'Alene Field Office (667-3524) IDEQ.
9. Personal communication with Pat Allen, Public Works (753-5475), Shoshone County Zoning and Planning Department, Wallace, Idaho.
10. Personal communication with Doug Conde, State of Idaho Deputy Attorney General, IDEQ (334-0497), Boise, Idaho.
11. Personal Communication with Myron Molnau, State Climatologist, University of Idaho (885-6182), Moscow, Idaho.
12. Personal communication with Brian Painter, Environmental Hydrogeologist, Coeur D'Alene Field Office (667-3524) IDEQ.
13. Unpublished data provided by Dr. Ted C. Bjornn, Idaho Cooperative Fish and Wildlife Research Unit, College of Forestry, Wildlife and Range Science, University of Idaho (885-6336) Moscow, Idaho.
14. Alt, D.D., Hyndman, D.W., Roadside Geology of Idaho, Mountain Press Publishing Company, Missoula, Montana, 1989.

ATTACHMENTS

Attachment 1: Location Maps

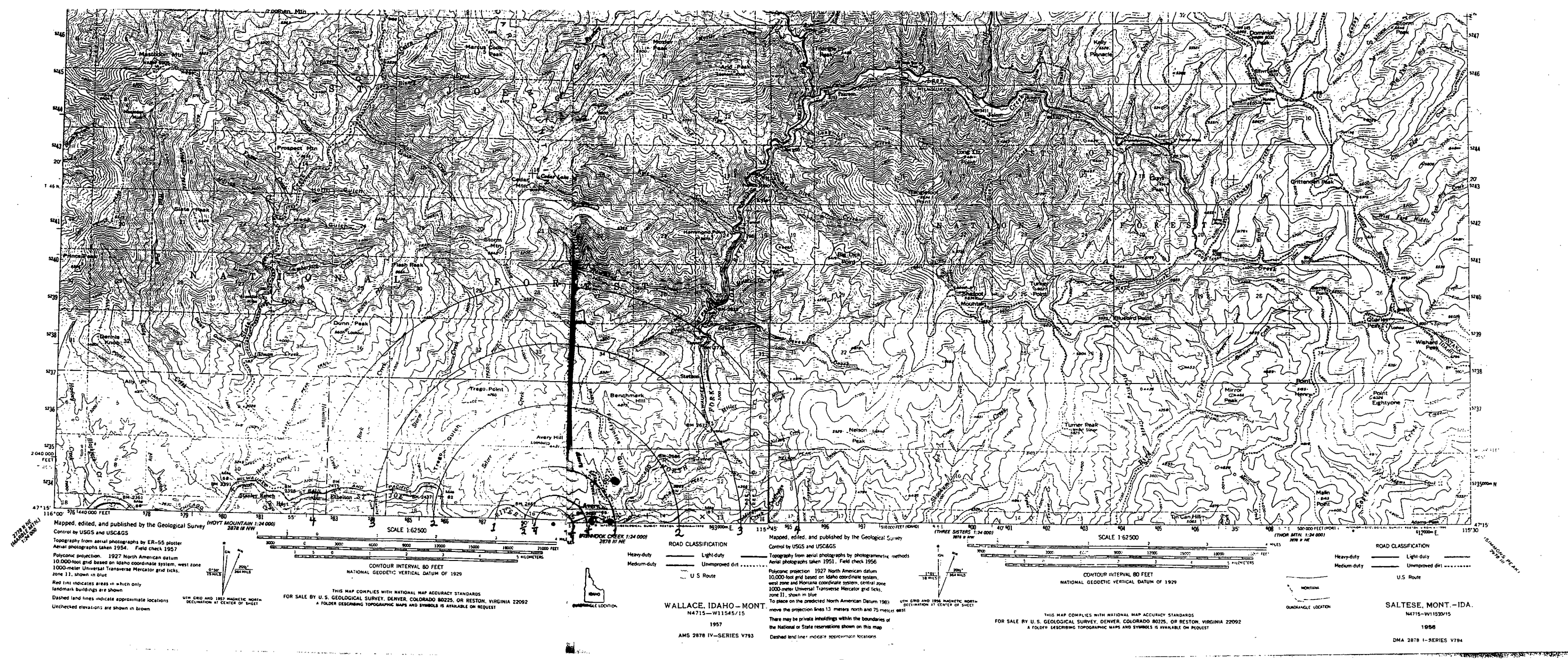
Attachment 2: Facility Map (1915 Plat Map)

Attachment 3: Well logs, Idaho Dept. of Water Resources, Boise
Idaho.

Attachment 4: Hart-Crowser Reports and Chemical analysis
completed by State of Idaho.

Attachment 5: Fish Count Data and Associated Calculations.

Attachment 1

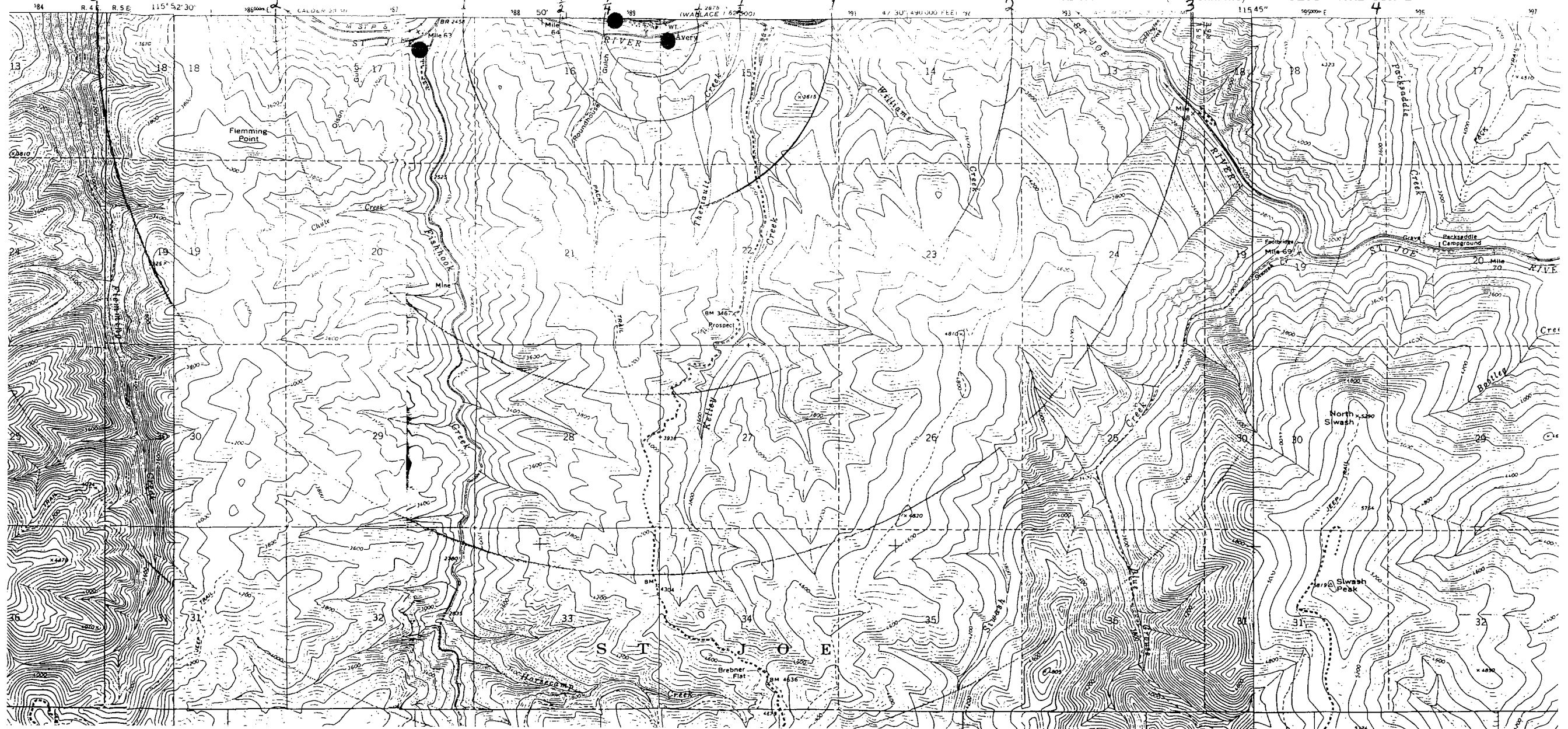


15 MINUTE SERIES (TOPOGRAPHIC)

GEOLOGICAL SURVEY

7.5 MINUTE SERIES (TOPOGRAPHIC)

GEOLOGICAL SURVEY



PAL 002221

Attachment 2

Attachment 3

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

USE TYPEWRITER OR
BALLPOINT PEN

State law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

WELL OWNERName Richard N. & Ter L. ParkerAddress Box 2, Avery, ID 83402

Owner's Permit No. _____

7. WATER LEVELStatic water level 16 feet below land surfaceFlowing? ☐ Yes ☒ No G.P.M. flow _____

Artesian closed-in pressure _____ p.s.i.

Controlled by ☐ Valve ☒ Cap ☐ PlugTemperature 60 °F Quality Good

Describe interior or temperature (water) below

NATURE OF WORK☒ New well ☐ Deepened ☐ Replacement☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)**8. WELL TEST DATA**☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M. _____ Pumping Level _____ Hours Performed _____

15 VERTICAL 2.6 hr**PROPOSED USE**☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal☐ Industrial ☐ Stock ☐ Waste Disposal or Injection☐ Other _____ (specify type)**9. LITHOLOGIC LOG**

Bore Diam.	Depth		Material	Water Yield No.
	From	To		
8	0	16	CLAY AND SHALE	X
16	16	24	SHALE	X
16	24	175	SHALE	X

METHOD DRILLED☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary☐ Cable ☐ Dug ☐ Other _____**WELL CONSTRUCTION**Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness Diameter From To
1.250 inches 16 inches + 2 feet 24 feet
 _____ inches _____ inches _____ feet _____ feet
 _____ inches _____ inches _____ feet _____ feet
 _____ inches _____ inches _____ feet _____ feet

Was casing drive shoe used? ☒ Yes ☐ NoWas a packer or seal used? ☐ Yes ☒ NoPerforated? ☐ Yes ☒ NoHow perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation _____ inches by _____ inches

Number From To
 _____ perforations _____ feet _____ feet
 _____ perforations _____ feet _____ feet
 _____ perforations _____ feet _____ feet

Well screen installed? ☐ Yes ☒ No

Manufacturer's name _____

Type _____ Model No. _____

Diameter _____ Slot size _____ Set from _____ feet to _____ feet

Diameter _____ Slot size _____ Set from _____ feet to _____ feet

Gravel packed? ☐ Yes ☒ No Size of gravel _____

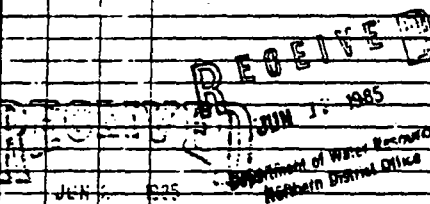
Placed from _____ feet to _____ feet

Surface seal depth 24 Material used in seal: ☐ Cement grout☒ Bentonite ☐ Pudding clay ☒ GATLINGSealing procedure used: ☐ Slurry pit ☐ Temp. surface casing☒ Overbore to seal depthMethod of joining casing: ☐ Threaded ☒ Welded ☐ Solvent

Weld _____

☐ Cemented between strata

Describe access port _____

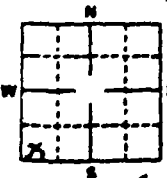


Department of Water Resources

10.

Work started 6/11/85 finished 6/12/85**11. LOCATION OF WELL**

Sketch map location must agree with written location.



Subdivision Name _____

Lot No. _____ Block No. _____

County SUB-SHOAESW 1/4 Sec 15 T. 45 N. R. 5 E.**11. DRILLERS CERTIFICATION**

I/We certify that all minimum well construction standards were complied with at the time the rig was ramped.

ASSOCIATED WELLFirm Name Drillers Inc Firm No. 245Address Box 723 C.O.A. Dam 6/13/85Signed by (Firm Official) John J. Hamiltonand
(Operator) Robert J. Dugan

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

State of Idaho
Department of Water Administration
WELL DRILLER'S REPORT

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

1. WELL OWNER

B.N.R. INC.
MERY TOWN
Burlington, North Carolina
650 CENTRAL BLVD.
SHELTON, NC 27814

2. NATURE OF WORK
☒ Water Supply ☐ Irrigation ☐ Test ☐ Other (Specify Type) _____
☐ New Well ☐ Industrial ☐ Other ☐ Waste Disposal (Indicate Direction) _____

3. PROPOSED USE
☒ Domestic ☐ Irrigation ☐ Test ☐ Other (Specify Type) _____
☐ New Well ☐ Industrial ☐ Other ☐ Waste Disposal (Indicate Direction) _____

4. METHOD DRILLED
☐ Cable ☒ Rotary ☐ Dig ☐ Other _____

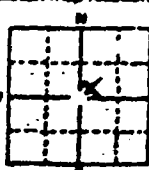
5. WELL CONSTRUCTION

Diameter of hole 6 inches Total depth 125 feet
Casing schedule ☒ Steel ☐ Concrete

Thickness	Diameter	From	To
<u>250</u> inches	<u>6</u> inches	<u>2</u> feet	<u>22</u> feet
<u>250</u> inches	<u>4</u> inches	<u>25</u> feet	<u>125</u> feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was a packer or seal used? ☐ Yes ☒ No
Percutated? ☒ Yes ☐ No
How percuted? ☐ Factory ☐ Knife ☐ Torch
Size of perforation 14 inches by 14 inches
Number _____ From _____ To _____
160 perforations _____ feet _____ feet
_____ perforations _____ feet _____ feet
_____ perforations _____ feet _____ feet

Well screen installed? ☐ Yes ☒ No
Manufacturer's name _____
Type _____ Model No. _____
Diameter _____ Slot size _____ Set from _____ feet to _____ feet
Diameter _____ Slot size _____ Set from _____ feet to _____ feet
Gravel packed? ☐ Yes ☒ No Size of gravel _____
Placed from _____ feet to _____ feet
Surface seal depth 20 Material used in seal ☐ Cement grout
☒ Pudding clay ☒ Well cuttings
Sealing procedure used ☐ Shrink gel ☐ Temporary surface casing
☒ Overbore to seal depth

6. LOCATION OF WELL
Sketch map location must agree with written location.

Subdivision Name _____
Lot No. _____ Block No. _____
County SHOSHONE
SE 1/4 Sec 17 T. 45 N. R. 5 E

7. WATER LEVEL
Static Water Level _____
Pumping Rate _____ GPM _____
Pumping Head _____ Feet
Pumping Time _____ Days _____ Hours _____ Minutes

8. WELL TEST DATA
Pump _____ Flow _____ Water _____
Pump _____ Flow _____ Water _____
Pump _____ Flow _____ Water _____

9. LITHOLOGIC LOG

Depth	Material	Water
0 - 23	CLAY, RED, SAND, GRAVEL	Yes
23 - 125	CLAY, RED, SAND, GRAVEL	Yes
125 - 150	CLAY, RED, SAND, GRAVEL	Yes
150 - 175	CLAY, RED, SAND, GRAVEL	Yes
175 - 200	CLAY, RED, SAND, GRAVEL	Yes
200 - 225	CLAY, RED, SAND, GRAVEL	Yes
225 - 250	CLAY, RED, SAND, GRAVEL	Yes
250 - 275	CLAY, RED, SAND, GRAVEL	Yes
275 - 300	CLAY, RED, SAND, GRAVEL	Yes
300 - 325	CLAY, RED, SAND, GRAVEL	Yes
325 - 350	CLAY, RED, SAND, GRAVEL	Yes
350 - 375	CLAY, RED, SAND, GRAVEL	Yes
375 - 400	CLAY, RED, SAND, GRAVEL	Yes
400 - 425	CLAY, RED, SAND, GRAVEL	Yes
425 - 450	CLAY, RED, SAND, GRAVEL	Yes
450 - 475	CLAY, RED, SAND, GRAVEL	Yes
475 - 500	CLAY, RED, SAND, GRAVEL	Yes
500 - 525	CLAY, RED, SAND, GRAVEL	Yes
525 - 550	CLAY, RED, SAND, GRAVEL	Yes
550 - 575	CLAY, RED, SAND, GRAVEL	Yes
575 - 600	CLAY, RED, SAND, GRAVEL	Yes
600 - 625	CLAY, RED, SAND, GRAVEL	Yes
625 - 650	CLAY, RED, SAND, GRAVEL	Yes
650 - 675	CLAY, RED, SAND, GRAVEL	Yes
675 - 700	CLAY, RED, SAND, GRAVEL	Yes
700 - 725	CLAY, RED, SAND, GRAVEL	Yes
725 - 750	CLAY, RED, SAND, GRAVEL	Yes
750 - 775	CLAY, RED, SAND, GRAVEL	Yes
775 - 800	CLAY, RED, SAND, GRAVEL	Yes
800 - 825	CLAY, RED, SAND, GRAVEL	Yes
825 - 850	CLAY, RED, SAND, GRAVEL	Yes
850 - 875	CLAY, RED, SAND, GRAVEL	Yes
875 - 900	CLAY, RED, SAND, GRAVEL	Yes
900 - 925	CLAY, RED, SAND, GRAVEL	Yes
925 - 950	CLAY, RED, SAND, GRAVEL	Yes
950 - 975	CLAY, RED, SAND, GRAVEL	Yes
975 - 1000	CLAY, RED, SAND, GRAVEL	Yes

10. Work started 1/15/14 Finished 1/15/14

11. DRILLER'S CERTIFICATION
Firm Name Shoshone Water Supply Firm No. 246
Address C. D. A. 7th St. Shoshone, ID
Signed by (Firm Official) Shoshone
and Shoshone
Driller Shoshone

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE COPY TO THE DEPARTMENT

PAL 002227

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

USE TYPEWRITER OR
BALLPOINT PEN

State law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

4.

1. WELL OWNER

Name Potlatch Corp. Northern Unit Logging

Address Box 386 St. Maries, Idaho 83861

Owner's Permit No. _____

7. WATER LEVEL

Static water level 20 feet below land surface

Flowing? ☐ Yes ☒ No G.P.M. flow _____

Artesian or confined pressure _____ p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

Temperature cold of Quality good

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
Abandoned (describe method of abandoning) _____

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
50 G.P.M.		

3. PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☒ Other Commercial Logging (specify type)
camp

4. METHOD DRILLED

☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

5. WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
250 inches	8 inches	1 feet	28 feet
250 inches	6 inches	3 feet	67 feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was casing drive shoe used? ☒ Yes ☐ No

Was a packer or seal used? ☐ Yes ☒ No

Perforated? ☒ Yes ☐ No

How perforated? ☐ Factory ☐ Knife ☒ Torch

Size of perforation 1/2 inches by 12 inches

Number	From	To
60 perforations	47 feet	67 feet
_____ perforations	_____ feet	_____ feet
_____ perforations	_____ feet	_____ feet

Well screen installed? ☐ Yes ☒ No

Manufacturer's name _____

Type _____ Model No. _____

Diameter _____ Slot size _____ Set from _____ feet to _____ feet

Diameter _____ Slot size _____ Set from _____ feet to _____ feet

Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____

Placed from _____ feet to _____ feet

Surface seal depth 18 Material used in seal: ☐ Cement grout

☒ Puddling clay ☐ Well cuttings

Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing

☒ Overbore to seal depth

Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent

☐ Cemented between struts

Describe access port welded

9. LITHOLOGIC LOG

Hole	Depth		Material	Water
Diam.	From	To		Yes No
8	0	18	fill sealed out water	x
8	18	30	cemented gravel	x
8	30	31	soft area	x
8	31	57	brown shale	x
8	57	58	fractured area	x
8	58	60	brown shale	x
8	60	61	fractured area	x
8	61	64	brown shale	x
8	64	67	fractures areas	x

2000-10-10

Department of Water Resources
Northern District Office

Department of Water Resources
2000-10-10

10/10

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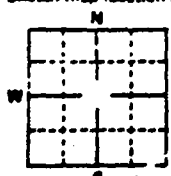
Department of Water Resources
Northern District Office

10.

Work started 11/16/79 finished 11/26/79

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____

Lot No. 1 Block No. _____

County Shoshone

1/2 Sec. 16 T. 45 N. 3 R. 5 E. W.

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name American Drilling Firm No. 269

Address P.O. Box 14977 Spokane Date 12/10/79

Signed by (Firm Official) James Murphy

and
(Operator) BO Murphy

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

well routinely tested
under downing roughly, well still in use

PAL 002228

Attachment 4



HART CROWSER

h and Environmental Technologies

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
FAX 206.328.5581
206.324.9530

J-2296-02

August 23, 1989

Mr. Mike Fish
Potlatch Corporation
Northern Woodlands Division
P.O. Box 386
Saint Maries, Idaho 83861

Re: Avery Idaho Site
Preliminary Environmental Service
Task 2 - Regulatory Assessment

Dear Mr. Fish:

This letter report presents our findings for Tasks 1 and 2 of the above referenced project. We performed this work per our signed contract dated July 19, 1989, and referenced as Hart Crowser Job J-2296-02.

Our work included:

Task 1

- o Obtain samples of waste oils from monitoring well MW-11 on-site and any other available sources; and

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JAN 11 1991

IDHW - Div. of Environ. Qual.
Water Quality Bureau

PAL 002230

- o Analyze the sample for chlorinated volatiles, cadmium, chromium, lead, and PCBs.

Task 2

- o A preliminary assessment of how recovered oily wastes may be regulated;
- o A regulatory assessment of possible disposal options for the oily wastes that may be collected from this site cleanup; and
- o A general review of other regulatory considerations.

This work was performed and this report prepared in accordance with generally accepted professional practices related to the nature of the work accomplished in the same or similar localities, at the time the services were performed. This letter report is intended for the exclusive use of Potlatch Corporation for specific application to the Avery Idaho site. This report is not meant to represent a legal opinion. No other condition, express or implied, should be understood.

RESULTS OF CHEMICAL ANALYSES

Current information from previous sampling and the Task 1 sampling and analysis indicates the oily materials found floating on the upper saturated soil horizon to be a petroleum product, probably waste oils.

A sample of the floating petroleum product was obtained from monitoring well MW-11 during a site visit made on July 26, 1989. No other wells contained floating free phase hydrocarbons at that time. Considerable evidence was observed along the river bank of recent and continuing hydrocarbon seeps along the river bank. However, there was not sufficient flow or accumulation to sample from the seeps. The samples were analyzed using Hart Crowser's FAST mobile laboratory. Results of the chemical analyses performed are summarized on Table 1. The laboratory report is attached. Also shown for comparison purposes are the waste oil specification limits contained in 40 CFR 266 Subpart E.

Table 1 - Chemical Analysis Results and Waste Oil
Specification Limits - parts per million (ppm)

<u>Parameter</u>	<u>Concentration in Sample</u>	<u>Specification Limit</u>
Arsenic	NA	5
Cadmium	ND	2
Chromium	20	10
Lead	30	100
Total Halogens	ND	4,000
PCBs	1.4	NS

NA = Not analyzed

ND = Not detected in sample

NS = No specification in 40 CFR 266

These results indicate that the oil is slightly out of specification due to chromium. The sample was not analyzed for arsenic due to limitations of the laboratory, however, based on past history of the site it seems unlikely that arsenic would be a significant factor. There is not a specification limit for PCBs in 40 CFR 266. However, the 0.4 ppm level in this sample is well below regulatory criteria of the Toxic Substances Control Act (TOSCA).

Although the single sample may not be totally representative of the petroleum products which may be recovered by the proposed interception trench, the results are encouraging for reuse as waste oil burned for energy. The high chrome value is still within limits for out of specification oil, or the oil could be blended down as discussed in the following section.

The railroad's past maintenance activities on this site are obviously the most likely source of these oily wastes. These activities would certainly have included oil changing, storage of heating oils and locomotive fuels, and other lubrication and petroleum product related maintenance activities.

PRELIMINARY ASSESSMENT OF RECOVERED OILY WASTES

The definition of a used oil from 40 CFR 266:



Potlatch Corporation
August 23, 1989

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"Used oil" means any oil that has been refined from crude oil, used, and as a result of such use, is contaminated by physical or chemical impurities.

Current information suggests that the oily material at the Avery Site is simply "used oil". Based on the sampling information, the oily waste has no detected chlorinated solvents and no significant PCB concentrations. Further, the only heavy metal of significance found was chrome, a common contaminate in used oils. Our limited sampling results show no unusual contaminate not common to used oils. Historical knowledge of the site's activities also suggests significant sources of used oils.

REGULATORY ASSESSMENT OF DISPOSAL OPTIONS

Options for the recovered oily waste vary depending on whether it is hazardous or non-hazardous waste. With limited data, the oily waste does not appear to be hazardous, except possibly for chrome. Obvious disposal options are:

- o Recycling
 - Treatment and reuse
 - Energy recovery by burning
- o Treatment
 - Biological, landfarming

- o Disposal
 - Incineration

Preliminary screening of the above options for cost, long term liability, permanence of solution, and ease of implementation (both physically and regulatory) concluded that energy recovery by burning effective met all the criteria.

The following is a brief description of the regulatory decision tree for oily waste (used oil) burned for energy recovery.

1. Is the waste a hazardous waste under Subpart O? If the waste has a listed hazardous waste, then it must be sent to a permitted Treatment, Storage, or Disposal (TSD) facility. Our waste predates the lists, and has no known source.
2. Has the waste been mixed with a hazardous waste? If yes, it may be burned as a hazardous waste fuel, under Subpart D, 40 CFR 266. Our waste has unknown source, so this question is not applicable.
3. Does the oily waste have greater than 1000 ppm total halogens? If yes, 40 CFR 266.40 (c) presumes that the used oil has been mixed with halogenated hazardous wastes. Go to 1. above or rebut this presumption by demonstrating otherwise. Our initial sampling detected no halogens.

- . Is the oil waste ONLY as a hazardous waste because of characteristics (e.g., heavy metals), or because of contaminants included from Small Quantity Generators (SQG)? Because we do not know the source of this oil waste, SQG's are not an issue. However, characteristics of chrome could possibly cause our waste to be designated a hazardous waste (based on our limited sampling). If this were the only reason for designation as hazardous waste, it could still be burned using Subpart E standards. If not, go to 2. above.
- . Does the oily waste meet the Specifications? The Specification in 40 CFR 266.40 include allowable levels for Arsenic, Cadmium, Chromium, Lead, Flash Point, and Total Halogens. Note our sampling results above.
 - A. Yes it does. Then the only management that is required is to keep records and analyze the material. Our waste slightly exceeds the Chrome levels, but you are allowed to blend this waste with other fuels to lower the total blended levels.
 - B. No it does not. The used oil fuel will be termed off-specification. 40 CFR 266.41 limits the types and design standards for boilers and industrial furnaces and requires that the burner notify EPA. Also recordkeeping and analysis of above are required.



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Options

The oily waste is most likely covered under 5.A. above. There is minimal requirement and the boiler at your facility can be used to burn the waste. Should the waste initially or partially be off-specification, blending with other recovered oily waste or blending with your current fuels may bring it into specification.

Should it be impossible to blend, treat, or process the oily wastes, they may still be marketed to others who may be able to blend before burning, or your boilers or industrial furnaces may meet the more limited boiler/furnace standard listed under 40 CFR 266.41 and 260.10.

OTHER REGULATORY ISSUES

Given the current analytical data, EPA is not likely to be concerned or get involved in this cleanup. Should human health or environmental damage occur, then EPA would reconsider there role. Also should the cleanup stall or slow significantly, EPA may increase their involvement. Their clearest authority to become involved would be through the use of the Clean Water Act as a consequence of seepage into the river.

An emergency cleanup under CERCLA does not appear likely. Petroleum spills are generally exempt from CERCLA. However, should high concentrations of Appendix VIII constituents be discovered, EPA has taken action.

?
will have

Potlatch Corporation
August 23, 1989

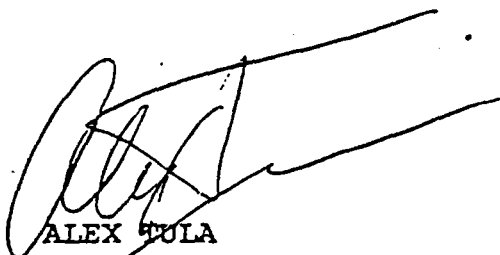
J-2296-02
Page 9

We appreciate the opportunity to assist you on this project. If you have any questions, please call.

Sincerely,

HART CROWSER

RICHARD D. PIERCE
Associate



ALEX TULA
Associate

RDP/AT:jal
L229601A/JOBS

Attachment:

FAST Laboratory Analytical Report

cc: Potlatch Corporation, Lewiston, Idaho,
Attn: William O. Daneworth

PAL 002238

Hart Crowser F.A.S.T Laboratory
METALS

Metals analysis is performed using a quick microwave digestion, if necessary, to prepare the sample. Quantitation and identification are performed using a flame atomic absorption spectrophotometer (flame AA). Approximate concentrations and tentative identifications derived from this screening method should be confirmed using EPA method 6010 or 7000.

Detection Limits

Metal	Routine Detection Limit	
	ppm in soil	ppb in water
-----	-----	-----
Cadmium	1.5	15
Chromium	0.5	5
Copper	1.0	10
Lead	10	100
Nickel	1.5	15
Zinc	3.6	36
-----	-----	-----

* = Wet Weight Basis

Sample Preparation

A one gm soil sample is placed in a teflon vessel with ten mls of concentrated nitric acid. The vessel is place in a microwave oven for twelve minutes. The vessel is allowed to cool and five mls of concentrated hydrogen peroxide is added. After bubbling ceases the digestate is filtered through 0.45 micron filter paper and diluted to 100 ml.

If digestion is requested for waters, fifty mls of sample is placed in a teflon vessel with three mls of concentrated nitric acid and two mls of hydrochloric acid. The vessel is placed in a microwave oven for thirty minutes. The vessel is allowed to cool, then shaken for thirty seconds and digestate filtered through 0.45 micron filter paper.

MIBK Water Extraction

An alternative method of water sample preparation is by treatment of 100 mls water with seven mls of chelating agent (diethyldithiocarbamate) followed by extraction with fifteen mls of Methyl Isobutyl Ketone (MIBK).

FAST Laboratory Analytical Report

FROM: Thomas Cammarata, Environmental Geochemist
TO: Alex Tula, Associate
DATE: August 1, 1989
SITE: Potlatch
RE: 2296-02
CC: Philip Spadaro, Sr. Project Environmental Chemist

Attached are the compiled results from field screening analysis conducted on one oil sample received on 7/26/89. Screening analysis was performed for PCBs, Chlorinated Screen, and metals (Cd, Cr, and Pb). This report contains:

- o Results for 1 oil sample
- o Results for 1 method blank
- o Results for 1 spike

The appendix to this report contains:

- o Detection limits
- o A description of the analytical method

Analytical Limitation

Analyses of the samples were performed using screening techniques. Quantitations are estimated, compounds identification are tentative.

Analytical Comments

Methodologies for analyses of PCBs, chlorinated compounds and metals in oil have been modified from those in the appendix. PCBs were extracted using a one gram sample and no methanol. For chlorinated compounds six tenths of a gram of oil was extracted into 3 ml of methanol. An aliquot of the extract was then taken into 15 ml of carbon free water. Metals were prepared using a half gram of oil into 12 ml of concentrated nitric acid.

The metals analysis data for oil does not reflect the total metal content of the oil. After sample digestion and prior to analysis, the digestate is filtered. Filtering removes material which may contain metals.

Analytical Results

Sample	Analysis	Matrix	mg/Kg
mw-11	Cd	oil	-
mw-11	Cr	oil	20
mw-11	Pb	oil	30
mw-11	PCBs	oil	1.4
mw-11	Chlorinated Volatiles	oil	-

- = below detection limits

All quantitation are estimates

All identifications are tentative

Quality Control

Sample	Analysis	mg/Kg	% Rec
Method Blank	Cd	-	
	Cr	0.48	
	Pb	1.9	
Method Blank	PCBs	-	
Method Blank	Chlorinated Volatiles	-	
mw-11	Cd		91
mw-11	Cr		109
mw-11	Pb		91
mw-11	PCBs		65

%Rec = percent spike recovery

- = below detection limits

Hart Crowser F.A.S.T. Laboratory
VOLATILES SCREEN

Volatiles are analyzed using an automated headspace system connected to a gas chromatograph. Compounds are detected with a Photon Ionization Detector (PID) and an Electrolytic Conductivity Detector (Hall or ELCD). Approximate concentrations and tentative identifications derived from this screening method should be confirmed using EPA method 601, 602, 624, 8010, 8015, 8020, or 8240.

Detection Limits

Compound	Routine Detection Limits	
	ppb in soil	water
Methylene Chloride	20	20
1,1-Dichloroethylene	20	20
1,1-Dichloroethane	20	20
Chloroform	10	10
Carbon Tetrachloride	10	10
1,2-Dichloropropane	20	20
Trichloroethylene	10	10
1,1,2-Trichloroethane	10	10
Dibromochloromethane	20	20
Tetrachloroethylene	10	10
Chlorobenzene	20	20
Trichlorofluoromethane	10	10
trans-1,2-Dichloroethylene	20	20
1,2-Dichloroethane	20	20
1,1,1-Trichloroethane	10	10
Bromodichloromethane	20	20
cis and trans-1,3-Dichloropropene	40	40
Bromoform	40	40
1,1,2,2-Tetrachloroethane	20	20
Benzene	10	10
Toluene	10	10
Ethylbenzene	10	10
Xylenes	10	10

* = Wet Weight Basis

Volatiles Screen

Sample Extraction Technique

Fifteen gms of soil or 15 ml of water are placed in a 20 ml headspace vial. Carbon free water saturated with sodium sulfate is added to soils until a set volume of headspace is left in each vial. Sodium sulfate is added to each water sample vial to assist in developing the headspace. Soil samples are shaken after capping. The vials are heated prior to analysis in an automated

Hart Crowser F.A.S.T. Laboratory
PESTICIDE / PCBs SCREEN

Polychlorinated Biphenyls (PCBs) and Pesticides are analyzed using a simple solvent extraction and acid cleanup procedure to prepare the sample. Quantitation and identification are performed using a gas chromatograph (GC) with an Electron Capture Detector (ECD). Approximate concentrations and tentative identifications derived from this screening method should be confirmed using EPA method 608, 612, 617, 625, 8120, or 8270.

Detection Limits

Compound	Routine Detection Limits	
	ppb in soil	water
Aroclor 1016	500	4.0
Aroclor 1221	500	4.0
Aroclor 1232	500	4.0
Aroclor 1242	500	4.0
Aroclor 1248	200	2.0
Aroclor 1254	200	2.0
Aroclor 1260	200	2.0
Aroclor 1262	200	2.0
Aldrin	20	0.1
alpha-BHC	20	0.1
beta-BHC	20	0.1
gamma-BHC (Lindane)	20	0.1
delta-BHC	20	0.1
4,4'-DDD	30	0.2
4,4'-DDE	30	0.2
4,4'-DDT	30	0.2
Dieldrin	30	0.2
Endosulfan I	20	0.1
Endosulfan II	30	0.2
Endosulfan Sulfate	30	0.2
Endrin	30	0.2
Endrin Aldehyde	30	0.2
Heptachlor	20	0.1
Heptachlor Epoxide	20	0.1

* = Wet Weight Basis

Sample Extraction Technique

Five gms of soil are placed in culture tube. One half ml of methanol is added to bind water. Five mls of hexane are added to the sample. The tube is capped and agitated for fifteen minutes. The tube is then placed in a centrifuge to settle particulates and separate the phases.

For PCB analysis, a two ml aliquot of the extract is transferred to a second container. One ml of concentrated sulfuric acid is added and the extract agitated. The vessel is placed in a centrifuge to settle the acid.

For pesticide analysis acid cleanup procedure is not used. Acid causes degradation of some pesticides.

Analytical Equipment

Analysis is performed using a Hewlett Packard 5890A gas chromatograph with an autosampler. The analytical column is a fused silica capillary column. The detector is an Electron Capture Detector (ECD). Sample capacity 35 samples per day.

Identification and Quantitation

Identification of PCBs are made by comparison to chromatograms of PCB standards analyzed on our GCs. All identifications are tentative. Quantitation of PCBs are made using a single concentration calibration standard for each PCB and five characteristic peaks for each standard. All quantitations are estimates.

Identification of pesticides are made by retention time comparisons to standards run during the analytical sequence. All identifications are tentative. Quantitation of volatiles are made using a single external concentration calibration standard. All quantitations are estimates.

Quality Control

Method blank	One per day or matrix
Matrix spike	One per 20 samples, sample set or matrix
Duplicate	One per 20 samples, sample set or matrix.
Target QC Values	Recovery +/- 50%
	Relative Difference <25%
Confirmation Samples	Recommend 10 to 20% samples split to confirming lab.

Spectrophotometer

Analysis of soil, water and MIBK extracted water samples is performed on a Perkin Elmer 2380 Flame Atomic Absorption Spectrophotometer. Sample capacity for flame AA performing a single metal analysis is 50 samples per day.

Identification and Quantitation

Samples are analyzed at the primary absorption frequency of the metal specific hollow cathode lamp. A single standard is analyzed at a concentration within the proven linear range of the instrument and or sufficient to give an absorbance of 0.2. All quantitations are estimates.

Quality Control

Method blank	One per day or matrix
Matrix spike	One per 20 samples, sample set or matrix
Duplicate	One per 20 samples, sample set or matrix
Target QC Values	Recovery +/- 50% Relative Difference <25%
Confirmation Samples	Recommend 10 to 20% samples split to confirming lab.



HART CROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, Washington 98102-3699
FAX 206.328.5581
206.324.9530

J-2296-01

October 27, 1989

Potlatch Corporation
P. O. Box 386
St. Maries, Idaho 83861

Attn: Mr. Mike Fish

Re: Site Exploration Report
Avery Landing Site
Avery, Idaho

Dear Mr. Fish:

Hart Crowser, Inc., is pleased to submit this letter report for work completed to date at the Avery Landing site in Avery, Idaho. Our work was completed as outlined in Task 1 of our revised scope of work letter dated June 30, 1989. Additional water and product sampling was completed as discussed in our memorandum to Mr. Mike Fish of Potlatch Corporation dated September 15, 1989.

The scope of Task 1 work involved monitoring well installation, groundwater and free-phase hydrocarbon sampling, and laboratory analysis. Field sampling of

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PAL 002246

free-phase hydrocarbons was not completed during our August site visit due to absence of free product in the newly installed wells at that time. Product sampling was completed during our September visit.

The purpose of our field work to date has been to determine the extent of the free-phase hydrocarbon lens and potential groundwater contamination. Water and free product samples were analyzed to determine the level of dissolved hydrocarbons in the groundwater and the suitability of the hydrocarbon material for burning as boiler fuel.

The following report will cover:

- o Monitoring well installation;
- o Groundwater and free-phase hydrocarbon sampling;
- o Laboratory analysis results; and
- o Conclusion and recommendations.

Appendix A contains a discussion of field procedures and well installation logs. Laboratory analysis certificates are presented in Appendix B.

Installation of Monitoring Wells

Four monitoring wells were installed at the Avery Landing site on August 22 and 23, 1989. The Hart Crowser on-site representative was Bruce McDonald, Senior Staff Engineering Geologist. The subcontracted drillers were Soil Sampling Service of Puyallup, Washington. All drilling was completed with air rotary drilling methods. Monitoring well locations are shown on Figure 1. Well construction data are presented on Figures A-2 through A-5. A key displaying the symbols used to describe well installation logs is presented on Figure A-1.

Groundwater and Free-Phase Hydrocarbon Sampling

Groundwater samples were collected on August 23, 1989, from each of the four monitoring wells installed by Hart Crowser. Monitoring wells HC-1 and HC-3 had no noticeable sheen on purged water. Heavy sheens were observed on purged water from monitoring wells HC-2 and HC-4, a strong odor was noted from HC-4. Free-phase hydrocarbons were not present in any of the new wells at that time. Water samples from HC-1 and HC-3 were submitted to Analytical Resources Incorporated of Seattle, Washington, under contract with Hart Crowser, for analysis of total petroleum hydrocarbons (TPH) and dissolved metals (arsenic, cadmium, chromium, and lead).

MW's HC-1 through HC-4

A representative from Hart Crowser returned to the Avery Landing site on September 26, 1989. Free-phase hydrocarbons thickness was measured at approximately 4 feet in monitoring well HC-4. Free-phase hydrocarbons were not detected in HC-2 or HC-3. According to trailer park residents living adjacent to the site, monitoring well HC-1 had been removed to repair water and sewer lines.

Groundwater samples were collected from HC-2 and HC-3, purge water from both wells had a slight odor and a light sheen. Samples were analyzed for fuel hydrocarbons using the free-product from HC-4 as a standard. Free-phase hydrocarbons were collected from HC-4 and analyzed for total extraction procedure toxicity (EP Tox) metals, polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PNAs), total halogenated hydrocarbons (TOX), total metals and flashpoint.

All samples were submitted to Analytical Resources Incorporated (ARI) for analysis, some analyses were subcontracted by ARI to Spectrum Laboratories, Inc., of Seattle. Sampling procedures may be found in Appendix A.

Laboratory Analysis Results

Groundwater

Water samples collected from HC-1 and HC-3 on August 23, 1989, were analyzed for TPH (EPA Method 418.1) and dissolved

Potlatch Corporation
October 27, 1989

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metals. TPH was nondetectable in HC-1 and HC-3, all metals were also nondetectable except arsenic in HC-3 at 0.009 parts per million (ppm).

Water samples collected September 26, 1989, from HC-2 and HC-3, were analyzed for fuel hydrocarbons by Gas Chromatograph (EPA Method 8015) using the free-phase hydrocarbons from HC-4 as a standard. Fuel hydrocarbons were nondetectable in both samples.

Table 1 summarizes the groundwater analysis results. Laboratory data sheets may be found in Appendix B.

Free-phase Hydrocarbons

Analysis of free-phase hydrocarbons in HC-4 resulted in nondetectable concentrations of all PNA compounds, PCBs, and total halogenated hydrocarbons. All EP Tox metals were also nondetectable except for barium at 0.005 ppm. The flash point of the free-phase hydrocarbons is reported as greater than 210 degrees Fahrenheit. The sample was also analyzed for total metals: cadmium (not detected), chromium (1 ppm), lead (5 ppm), and arsenic (not detected).

Potlatch Corporation
October 27, 1989

Summary

CONCLUSIONS AND RECOMMENDATIONS

The analytical results indicate the following:

- o The groundwater in well HC-1 at the west property line does not appear to be impacted by the petroleum hydrocarbons;
- o The majority of the free-phase petroleum appears to lie beneath the eastern part of the site;
- o The free-phase petroleum is not a characteristic hazardous waste as determined by the EP Toxicity test as defined under federal law;
- o The free-phase petroleum appears suitable for use by burning for fuel in energy recovery boilers;
- o Our prior concept for an interception recovery trench to prevent migration of the petroleum to the St. Joe River still appears appropriate and practical.

Our work has been performed in accordance with generally accepted professional practices in the same or similar localities, related to the nature of the work accomplished at the time the services were performed. It is intended for the exclusive use of Potlatch Corporation, for specific

Potlatch Corporation
October 27, 1989


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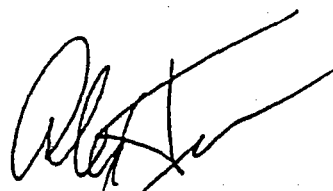
application to the project site. No other conditions, express or implied, should be understood.

Any questions regarding this report are welcome and should be referred to Alex Tula, Project Manager.

Sincerely,

HART CROWSER, INC.


JERI L. MASSENGILL
Staff Geologist


ALEX TULA
Associate

JLM/AT:cmr/sde
LR22961A/JOBS

Attachments:

Table 1 - Groundwater Analysis Summary
Figure 1 - Site and Exploration Plan
Appendix A - Field Procedures
Figure A-1 - Key to Exploration Logs
Figure A-2 - Well Construction Data
through A-5 for Monitoring Well HC-1 through HC-4
Appendix B - Laboratory Data Sheets
Analytical Resources Incorporated
and Spectra Laboratories, Inc.

Table 1 - Groundwater Analysis Summary

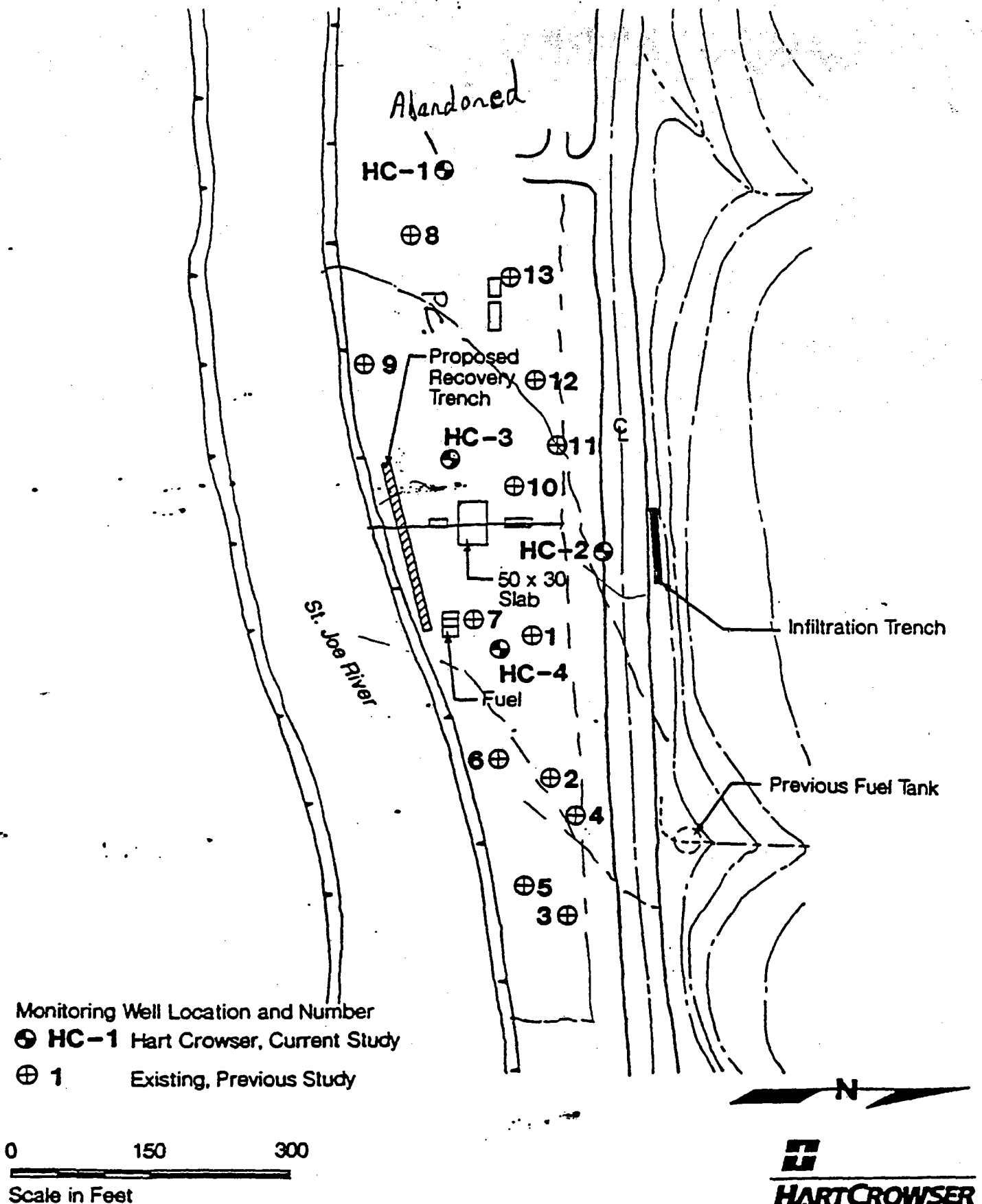
Well	Date Sampled	Analysis Performed	
		TPH	Dissolved Metals
HC-1	August 23, 1989	(EPA Method 418.1)	
		< 10.0	< 0.001 Arsenic
			< 0.002 Cadmium
			< 0.005 Chromium
HC-3	August 23, 1989		< 0.001 Lead
		< 10.0	0.009 Arsenic
			< 0.002 Cadmium
			< 0.005 Chromium
HC-2	September 26, 1989	TPH (EPA Method 8015)	< 0.001 Lead
		< 50.0 *	
HC-3	September 26, 1989	< 50.0 *	

Results reported in parts per million (ppm)

* Analyses performed using free-phase hydrocarbons collected in HC-4 as a standard.

< Not detected at analytical detection limit indicated.

Site and Exploration Plan



APPENDIX A FIELD PROCEDURES

INTRODUCTION

Field work was completed between August 22, 1989 and September 26, 1989, by Hart Crowser, Inc., and their subcontractor. Hart Crowser's field representatives for this project were Bruce McDonald, Senior Staff Engineering Geologist and Jeri Massengill, Staff Geologist.

Soil Sampling Services, Inc., of Puyallup, Washington, under subcontract to Hart Crowser, completed the drilling and well installation activities on all wells. Groundwater samples were submitted to Analytical Resources, Inc., of Seattle, Washington, for chemical testing.

The program of well installation included the completion of four borings, all of which were completed with air rotary drilling methods using compressed air to lift cuttings from the boring.

The monitoring well locations are presented on Figure 1. Locations were established by hand tapping or pacing from existing physical features.

Air Rotary Borings

All borings were completed using percussion bit rotary drilling and air lifted cuttings. Borings were drilled between August 22 and 23, 1989, and completed within a range of depths from 18.5 feet to 23.4 feet below the ground surface. Borings were advanced with a truck-mounted drilling rig using an air-driven percussion bit inside a six-inch inside diameter driven casing. Drilling was accomplished under the continuous observation of a Hart Crowser field representative.

Well Installations

All wells are of 2-inch inside diameter Schedule 40 PVC single well construction and have 10-foot screened sections with 0.020-inch slot size. Wells were installed by lowering the casing to the desired depth. Aqua 8 sand was used to backfill the annulus around the screen to a level 2 feet above the top of the screen. Bentonite chips were used to backfill and grout

the borehole to a depth of 1 foot below the surface. All wells have a concrete surface seal and are protected by either a flush or stickup locking steel monument. Well construction information is presented on Figures A-2 through A-5.

Water Level Measurements

Water level measurements were made for each boring at the time water was first observed during drilling, and immediately prior to placement of the well screen. Subsequent sets of water level measurements were made of all wells installed. These were made before well development and sampling.

Water levels were measured to an accuracy of 0.01 foot using an Olympic Model 300 Electric Well Probe and a decimally graduated tape measure. The tip of the well probe was routinely rinsed with deionized water between wells in order to prevent chemical cross contamination.

Well Development

Development of wells was accomplished by hand bailing. Wells were developed by purging at least four casing volumes of water to remove the fine-grained silt and sand and suspended clay from the well bottom. The wells retained a slight degree of turbidity after development with the exception of HC-3 which remained very turbid.

Groundwater and Free-Phase Hydrocarbon Sampling for Chemical Analysis

Groundwater samples were obtained from the 4 monitoring wells on August 23, 1989. Free-phase hydrocarbon from HC-4 and groundwater samples from HC-2 and HC-3 were collected on September 26, 1989.

Groundwater samples from monitoring wells were obtained using a stainless steel or teflon bailer. To obtain representative groundwater samples, at least 3 casing volumes of water were purged prior to actual sampling. Water was then poured from the bailer into appropriate laboratory provided bottles.

Free-phase hydrocarbons were detected in monitoring well HC-4 during our September 26, 1989, visit. HC-4 was not purged prior to sampling; in this case, the free-phase hydrocarbons were poured from a plastic disposable bailer into a laboratory provided bottle.

All samples were labeled and placed on an ice insulated cooler. Sample custody was documented at all times.

Decontamination Procedures

Drilling, sampling, and testing equipment were routinely decontaminated in the field. Decontamination of drilling equipment between explorations consisted of steam cleaning followed by a tap water rinse. PVC components (screen, riser, and end caps) used in well construction were also steam cleaned and rinsed in tap water prior to installation.

The well probe and sampling bailers were decontaminated with a wash of distilled water and detergent followed by two distilled water rinses.

Chain of Custody

All sample jars were prelabeled with well number, job number, date, and the samplers initials. Chain of custody forms were filled out, signed, and countersigned for transfers of samples from the possession of Hart Crowser field representatives to personnel at Analytical Resources, Inc. Chain of custody documents are maintained in the QA/QC records of Hart Crowser.

Key to Exploration Logs

Sample Descriptions

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:

Density/consistency, moisture, color, minor constituents, MAJOR CONSTITUENT, additional remarks.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits is estimated based on visual observation and is presented parenthetically on the test pit logs.

SAND or GRAVEL	Standard Penetration Resistance in Blows/Foot	SILT or CLAY	Standard Penetration Resistance in Blows/Foot	Approximate Shear Strength in TSF
Density		Consistency		
Very loose	0 - 4	Very soft	0 - 2	<0.125
Loose	4 - 10	Soft	2 - 4	0.125 - 0.25
Medium dense	10 - 30	Medium stiff	4 - 8	0.25 - 0.5
Dense	30 - 50	Stiff	8 - 15	0.5 - 1.0
Very dense	>50	Very stiff	15 - 30	1.0 - 2.0
		Hard	>30	>2.0

Moisture

Dry	Little perceptible moisture
Damp	Some perceptible moisture, probably below optimum
Moist	Probably near optimum moisture content
Wet	Much perceptible moisture, probably above optimum





Minor Constituents

Minor Constituents	Estimated Percentage
Not identified in description	0 - 5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

Legends

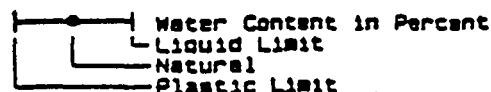
Sampling

BORING SAMPLES

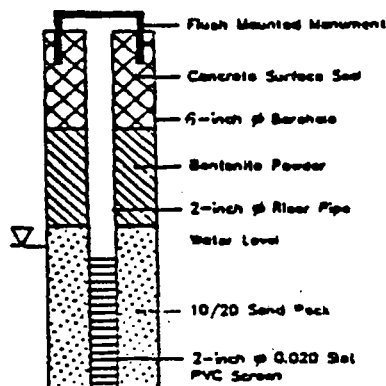
-  Split Spoon
-  Shelby Tube
-  Cuttings
-  Core Run
- * No Sample Recovery
- P Tube Pushed, Not Driven

Test Symbols

- GS Grain Size Classification
- CN Consolidation
- TUU Triaxial Unconsolidated Undrained
- TCU Triaxial Consolidated Undrained
- TCO Triaxial Consolidated Drained
- QU Unconfined Compression
- DS Direct Shear
- K Permeability
- PP Pocket Penetrometer
- TV Approximate Compressive Strength in TSF
- TV Torvane
- CBR Approximate Shear Strength in TSF
- CBR California Bearing Ratio
- MD Moisture Density Relationship
- AL Atterberg Limits



Ground Water Observations



HARTCROWSER

J-2296-01 10/89

Figure A-1

13

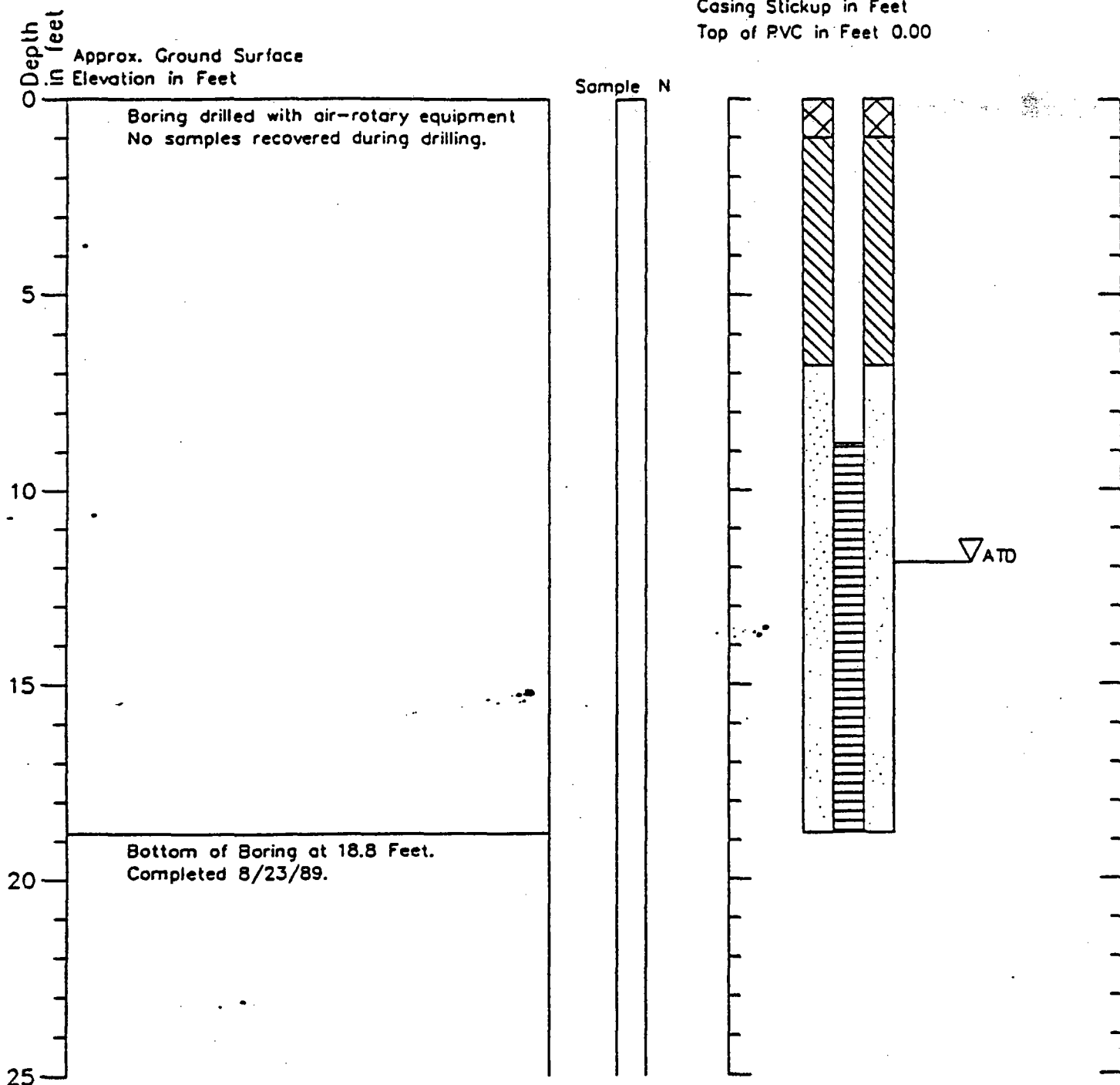
PAL 002258

Boring Log and Construction Data for Monitoring Well HC-1

Geologic Log

Monitoring Well Design

Casing Stickup in Feet
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



HARTCROWSER

J-2296-01

8/89

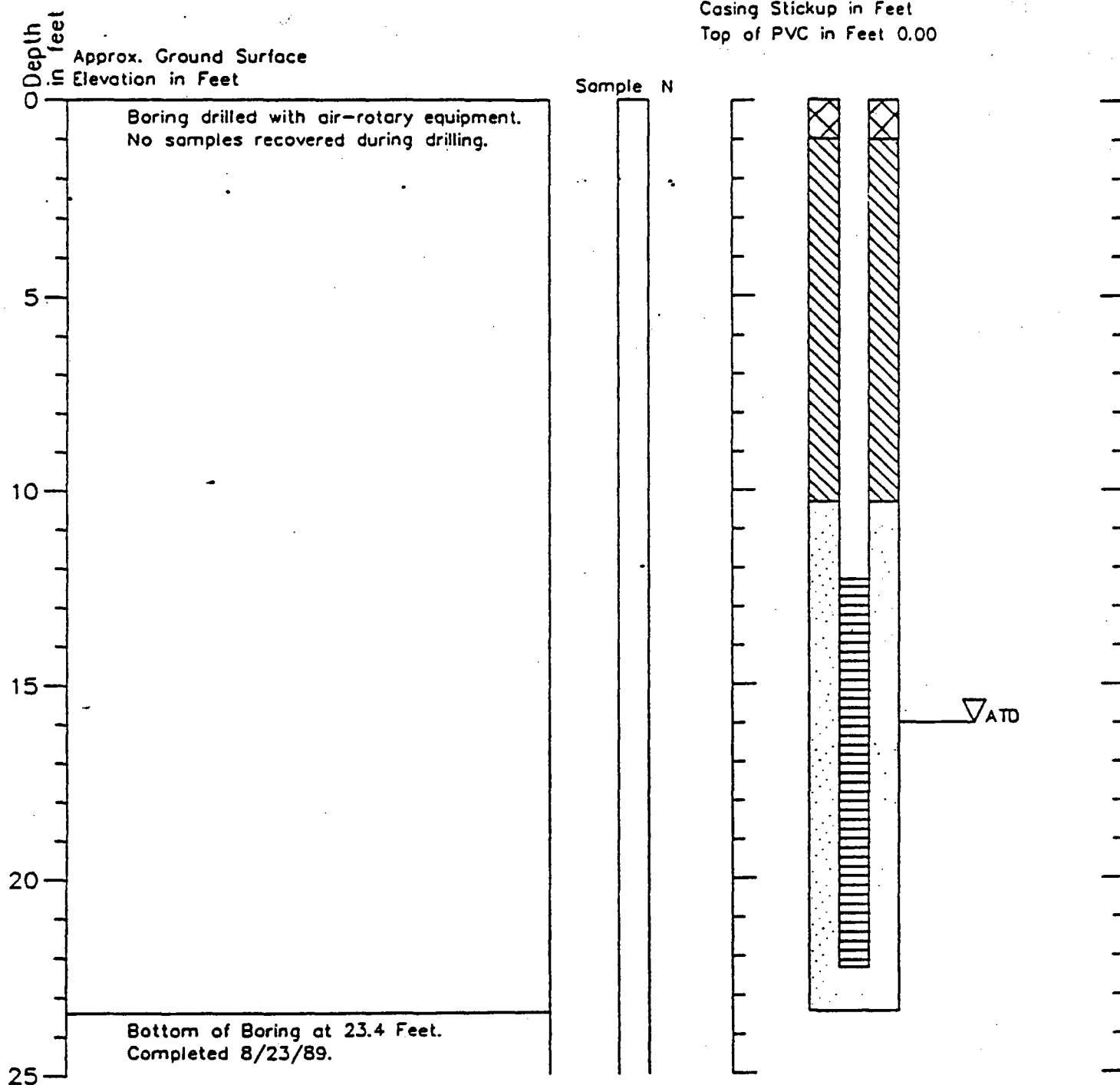
Figure A-2

Boring Log and Construction Data for Monitoring Well HC-2

Geologic Log

Monitoring Well Design

Casing Stickup in Feet
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



HARTCROWSER

J-2296-01

8/89

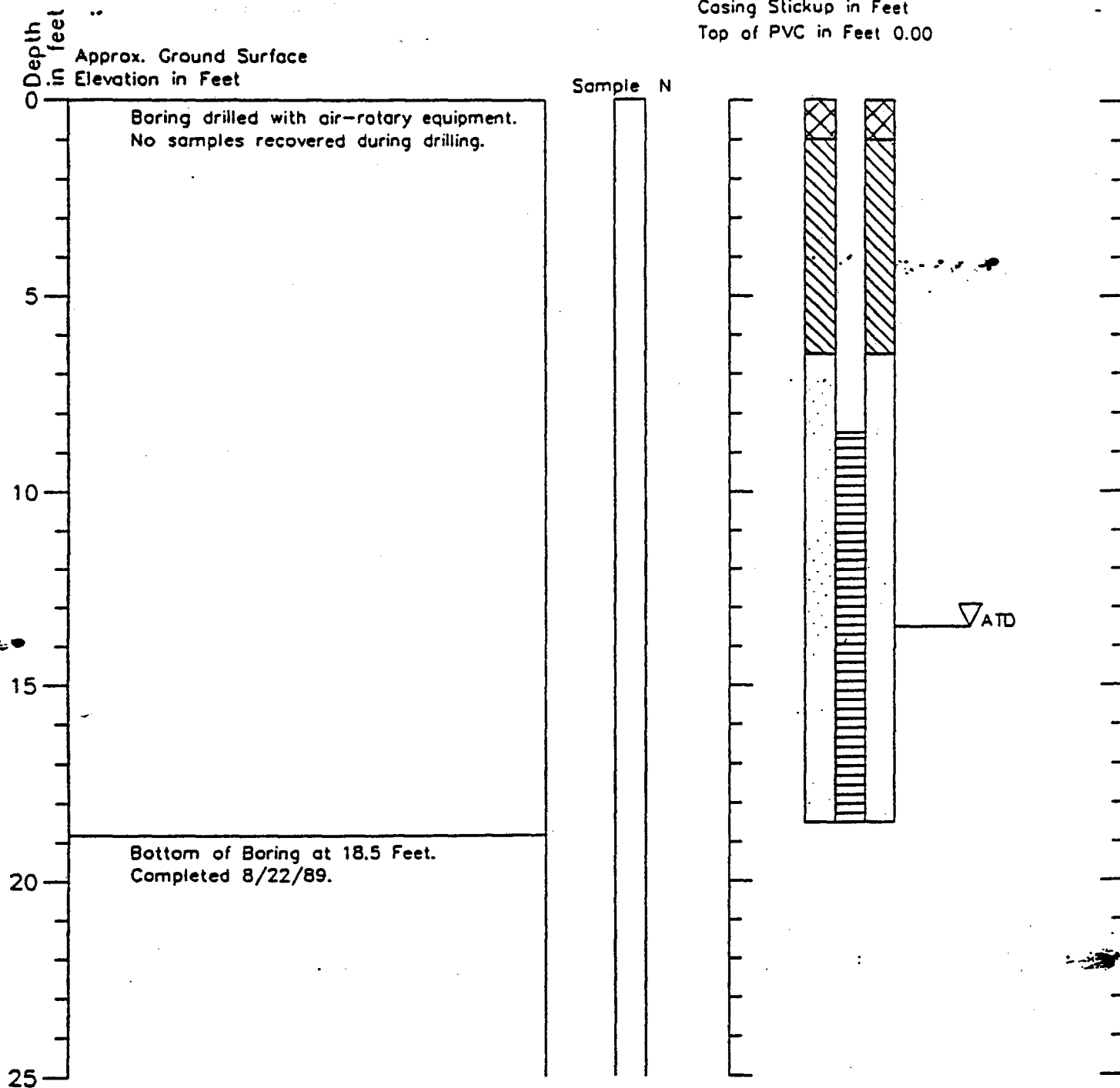
Figure A-3

Boring Log and Construction Data for Monitoring Well HC-4

Geologic Log

Monitoring Well Design

Casing Stickup in Feet
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



HARTCROWSER

J-2296-01

8/89

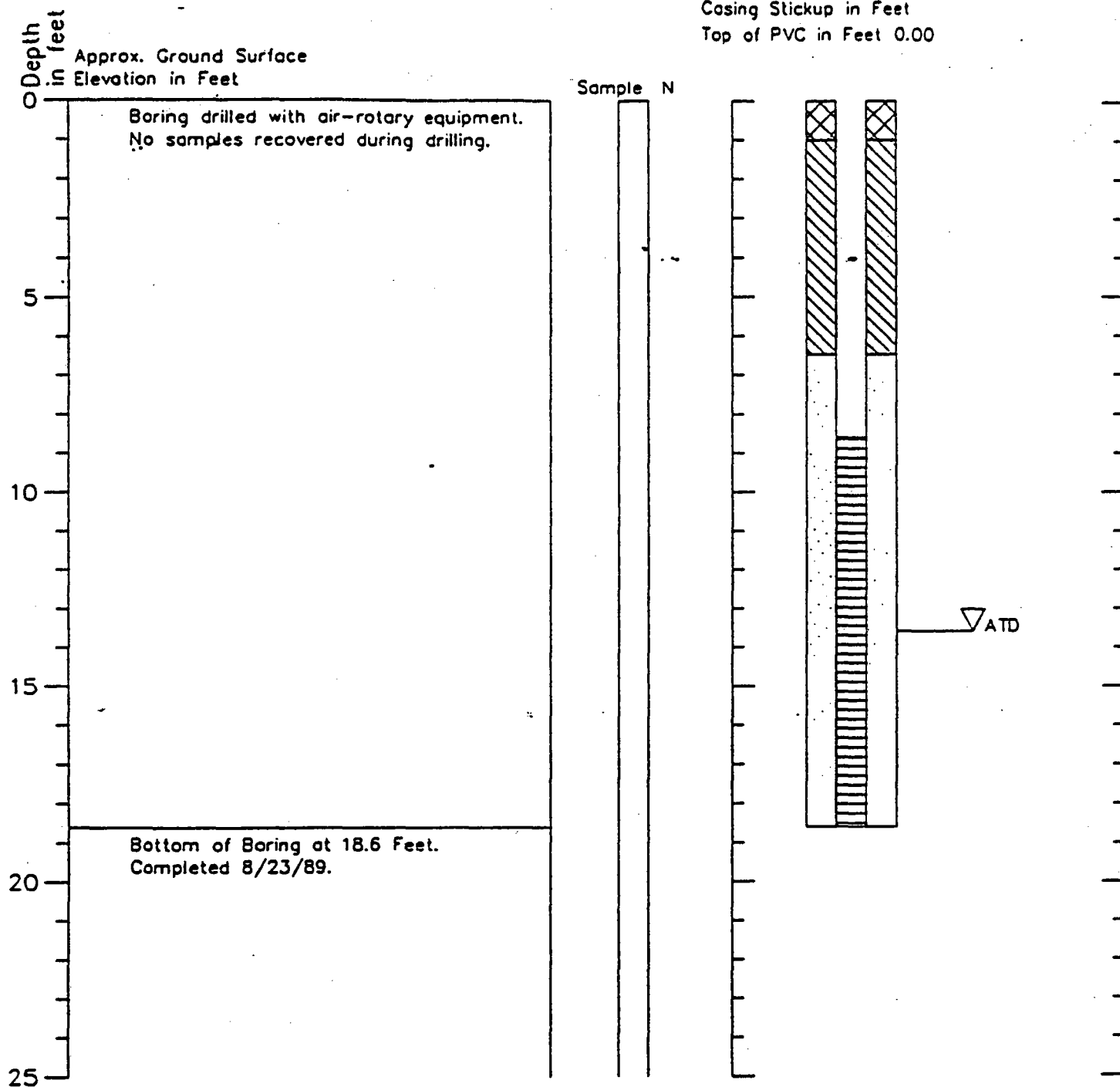
Figure A-5

Boring Log and Construction Data for Monitoring Well HC-3

Geologic Log

Monitoring Well Design

Casing Stickup in Feet
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.

HARTCROWSER
J-2296-01 8/89
Figure A-4



**ANALYTICAL
RESOURCES
INCORPORATED**

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

**TOTAL PETROLEUM HYDROCARBONS by IR Scan
Modified EPA Method 418.1**

Matrix: Water

Project: Potlatch Corp.

#J-2296-01

QC Report No: 3540-Hart Crowser

VTSR: 08/28/89

Data Release Authorized 

Data Prepared: 08/29/89 - MAC:C C.G.

Date of Analysis: 08/29/89

Date Prepared: 08/29/89

	Lab ID	Client Sample ID	Dilution Factor	TPH (ppm)
1	3540 MB	Method Blank	1	10 U
2	3540 A	HC-1	1	10 U
3	3540 B	HC-3	1	10 U

Values reported in ppm (mg/Kg) based on wet weight of sample

U Indicates compound was analyzed for but not detected at the given
detection limit.

5

PAL 002263

ANALYTICAL RESOURCES, INC.
Inorganic Laboratory Data Report
09/05/89
10:58:34

Client: HART CROWSER
Contact: SCOTT FERRIS
Project: POTLATCH CORP
ID number: HC-1
Description:
Sampled: / /
Matrix: WATER

ARI job number: 3540
ARI sample number: A

Released by: NRW

A N A L Y T I C A L R E S U L T S

CAS Number	Analyte	Concentration	C	Prep	M
7440-38-2	Arsenic	0.001 mg/L	L	DMN	GFA
7440-43-9	Cadmium	0.002 mg/L	L	DMN	ICP
7440-47-3	Chromium	0.005 mg/L	L	DMN	ICP
7439-92-1	Lead	0.001 mg/L	L	DMN	GFA

ANALYTICAL RESOURCES, INC.
Inorganic Laboratory Data Report
09/05/89
10:58:41

Client: HART CROWSER
Contact: SCOTT FERRIS
Project: POTLATCH CORP
ID number: HC-3
Description:
Sampled: / /
Matrix: WATER

ARI job number: 3540
ARI sample number: B

Released by: NRW

A N A L Y T I C A L R E S U L T S

CAS Number	Analyte	Concentration	C	Prep	M
7440-38-2	Arsenic	0.009 mg/L		DMN	GFA
7440-43-9	Cadmium	0.002 mg/L	L	DMN	ICP
7440-47-3	Chromium	0.005 mg/L	L	DMN	ICP
7439-92-1	Lead	0.001 mg/L	L	DMN	GFA



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Consultants

333 Ninth Ave. North
Seattle, Wa 98109-5187
(206) 621-6490

**DATA REPORT SHEET
Product Analysis**

**CLIENT: Hart Crowser
ARI JOB #: 284503747
VTSR: 09/28/89
PROJECT: 2296-02
Avery Landing**

<u>ARI SAMPLE #</u>	<u>CLIENT SAMPLE #</u>	<u>Product (ppm)</u>
3747 A	MW-2/S-1	50 UJ
3747 B	MW3/S-1	50 UJ
3747 MB	Method Blank	50 UJ

DATA QUALIFIER

- U Indicates compound analyzed for but not detected at the given detection limit.
- J Indicates value is estimated, based on results of client-supplied product which was used for a standard.

Date Release Authorized: 

Report prepared 10/27/89 - MAC:B

8

PAL 002266



SPECTRA Laboratories, Inc.

5013 Pacific Hwy. E. #12 • Tacoma, WA 98424 • (206) 922-5120

October 5, 1989

Analytical Resources Inc.
333 Ninth Ave North
Seattle, WA 98109-5187
Customer #81570

Sample ID: MW 4/S-1
ARI #3747-C
Spectra #26941

Attn: Catherine Greer

Total halogens, ppm

<1

Flash Point, FMCC °F

>210

EP Toxicity Metals, mg/l

Lead	(Pb)	<0.01
Chromium	(Cr)	<0.002
Silver	(Ag)	<0.004
Barium	(Ba)	0.005
Cadmium	(Cd)	<0.005
Arsenic	(As)	<0.08
Mercury	(Hg)	<0.02
Selenium	(Se)	<0.1

SPECTRA LABORATORIES, INC.


Steven G. Hibbs, Chemist

9
PAL 002267



ANALYTICAL
RESOURCES
INCORPORATED

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET
PCB Analysis

Matrix: Oil

QC Report: 3747-Hart Crowser
Project No: 2296-02/Avery Landing
Date Received: 09/28/89

Data Release Authorized *Peter M. Kyle*
Report prepared: 10/04/89 - MAC:C

Sulfur Cleaned: NO
Alumina Cleaned: NO
GPC Cleaned: NO

Reported in ppm (mg/Kg)

Sample #:	Method Blk.	MW-4/S-1
ARI Lab ID:	3747MB	3747C
Date Extracted:	10/03/89	10/03/89
Date Analyzed:	10/03/89	10/03/89
Sample Weight:	5.0 g	5.04 g
Dilution:	1:40	1:40

1016/1242	1.0U	2.0U
1248	1.0U	2.0U
1254	1.0U	2.0U
1260	1.0U	2.0U

DBC %Rec	55%	78%
----------	-----	-----

Data Reporting Qualifiers

U Indicates compound was analyzed for
but not detected at the given detection
limit.

NR Indicates compound not reported due
to chromatographic interference
and/or dilution.



**ANALYTICAL
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Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET- PNA by GC-FID

Lab Sample ID: 3747 C
Matrix: Product

Date Extracted: 10/03/89
Date Analyzed: 10/05/89
Conc/Dil Factor: 1:100
Dry Weight: 1.24 grams

Sample No: MW-4/S-1
QC Report No: 3747-Hart Crowser
VTSR: 09/28/89

Data Release Authorized: *Pete M. Lynch*

Reported In ppm(mg/kg)

PORT PREPARED: MAC:C - C.G.. (10/05/89)

CAS Number		mg/kg
91-20-3	Naphthalene	1000 U
208-96-8	Acenaphthylene	1300 U
83-32-9	Acenaphthene	1400 U
86-73-7	Fluorene	1300 U
85-01-8	Phenanthrene	1200 U
120-12-7	Anthracene	1000 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
56-55-3	Benzo(a)Anthracene	200 U
218-01-9	Chrysene	200 U
205-99-2	Benzo(b)Fluoranthene &	
207-08-9	Benzo(k)Fluoranthene	300 U
50-32-8	Benzo(a)Pyrene	300 U
193-39-5	Indeno(1,2,3-cd)Pyrene	500 U
53-70-3	Dibenz(a,h)Anthracene	500 U
191-24-2	Benzo(ghi)Perylene	600 U

SURROGATE PERCENT RECOVERY

Terphenyl	103%
-----------	------

Data Qualifiers

- U Indicates compound was analyzed for
but not detected at the given detection limit.
- NA Indicates compound not analyzed.
- NR Indicates compound not reported due to
dilution and/or matrix interference.



ANALYTICAL
RESOURCES
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Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5
(206) 621-6490
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET- PNA by GC-FID

Lab Sample ID: 1003MB
Matrix: Product

Sample No: Method Blank
QC Report No: 3747-Hart Crowser
VTSR: 09/28/89

Date Extracted: 10/03/89
Date Analyzed: 10/05/89
Conc/Dil Factor: 1:10
Dry Weight: 4.0 grams

Data Release Authorized: *Peter M. Lynch*

PORT PREPARED: MAC:C - C.G. (10/05/89)

Reported in ppm(mg/kg)

CAS Number		mg/kg
91-20-3	Naphthalene	2.0 U
208-96-8	Acenaphthylene	2.0 U
83-32-9	Acenaphthene	2.0 U
86-73-7	Fluorene	2.0 U
85-01-8	Phenanthrene	2.0 U
120-12-7	Anthracene	2.0 U
206-44-0	Fluoranthene	2.0 U
129-00-0	Pyrene	2.0 U
56-55-3	Benzo(a)Anthracene	2.0 U
218-01-9	Chrysene	2.0 U
205-99-2	Benzo(b)Fluoranthene	2.0 U
207-08-9	Benzo(k)Fluoranthene	3.0 U
50-32-8	Benzo(a)Pyrene	3.0 U
193-39-5	Indeno(1,2,3-cd)Pyrene	5.0 U
53-70-3	Dibenz(a,h)Anthracene	5.0 U
191-24-2	Benzo(ghi)Perylene	6.0 U

SURROGATE PERCENT RECOVERY

Terphenyl	109%
-----------	------

Data Qualifiers

- U Indicates compound was analyzed for
but not detected at the given detection limit.
- NA Indicates compound not analyzed.
- NR Indicates compound not reported due to
dilution and/or matrix interference.

SPECTRA Laboratories, Inc.

5013 Pacific Hwy. E. #12 • Tacoma, WA 98424 • (206) 922-5120

October 17, 1989

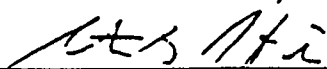
Analytical Resources Inc.
333 Ninth Avenue North
Seattle, WA 98109-5187
Customer #81570

Sample ID: MW-4/5-1 3747-C
Desc: Oil
Spectra #27474
RUSH

Attn: Dave Mitchell

Cadmium	(Cd), ppm	<1
Chromium	(Cr), ppm	1
Lead	(Pb), ppm	5
Arsenic	(As), ppm	<1

SPECTRA LABORATORIES, INC.


Steven G. Hibbs, Chemist

IDAHO DEPARTMENT OF HEALTH AND WELFARE
BUREAU OF LABORATORIES
2220 Old Penitentiary Road, Boise, Idaho 83712
334-2235

ORGANIC CHEMISTRY REPORT - VOLATILE ORGANIC COMPOUNDS

Sample: WATER (HC-4) Log No.: 90-1467
Analyst: W. BAKER Date Analyzed: 10.23.90 Date Reported: 10.26.90

	Results (ug/l)*	Maximum Contaminant Level (ug/l)
<u>THM'S (Trihalomethanes)</u> [Method: 502.2]		
Bromodichloromethane	(u)	
Bromoform	()	Total THM's
Chloroform	()	100.0
Dibromochloromethane	()	
<u>REGULATED VOC'S</u> [Method: 502.2]		
Vinyl chloride	(u)	2.00
1,1-Dichloroethylene	()	7.00
1,1,1-Trichloroethane	()	200.00
Carbon tetrachloride	()	5.00
Benzene	(58.6)	5.00
1,2-Dichloroethane	(u)	5.00
Trichloroethylene "Trike"	()	5.00
p-Dichlorobenzene	()	75.00
<u>UNREGULATED VOC'S</u> [Method: 502.2]		
Bromobenzene	(u)	5.0**
Bromochloromethane	()	5.0**
Bromomethane	()	5.0**
n-Butylbenzene	()	5.0**
sec-Butylbenzene	()	5.0**
tert-Butylbenzene	()	5.0**
Chlorobenzene	()	100.0***
Chloroethane	()	5.0**
Chloromethane	()	5.0**
p-Chlorotoluene	()	5.0**
p-Chlorotoluene	()	5.0**
1,2-Dibromo-3-chloropropane (DBCP)	()	5.0**
Ethylene dibromide (EDB)	()	5.0**
Dibromomethane	()	5.0**
m-Dichlorobenzene	()	5.0**
p-Dichlorobenzene	()	600.0***
Dichlorodifluoromethane	()	5.0**
1,1-Dichloroethane	()	5.0**
cis-1,2-Dichloroethylene	()	70.0***
trans-1,2-Dichloroethylene	()	100.0***
1,2-Dichloropropane	()	5.0***
1,3-Dichloropropane	()	5.0**
2,2-Dichloropropane	()	5.0**
1,1-Dichloropropane	()	5.0**

(OVER)

OCT 28 1990

	Results (ug/l)*	Maximum Contaminant Level (ug/l)
Ethylbenzene	(1.04)	700.0***
Hexachlorobutadiene	()	5.0**
Isopropylbenzene	()	5.0**
p-Isopropyltoluene	()	5.0**
Ethylene chloride	()	5.0**
Naphthalene	()	5.0**
n-Propylbenzene	()	5.0**
Styrene	()	5.0**
1,1,1,2-Tetrachloroethane	()	5.0**
1,1,2,2-Tetrachloroethane	()	5.0**
Tetrachloroethylene "PERK"	()	5.0***
Toluene	(3.97)	2000.0***
1,2,3-Trichlorobenzene	()	5.0**
1,2,4-Trichlorobenzene	()	5.0**
1,1,2-Trichloroethane	()	5.0**
Trichlorofluoromethane	()	5.0**
1,2,3-Trichloropropane	()	5.0**
1,2,4-Trimethylbenzene	()	5.0**
1,3,5-Trimethylbenzene	()	5.0**
m-Xylene + p-Xylene	(u)	Total xylenes
o-Xylene	(0.88)	10000.0***
	()	
	()	
	()	
	()	
	()	
	()	

* All analytical results less than MDL will be listed as U.
 ** Laboratory assumed MCL (not officially established as MCL by EPA)
 *** EPA proposed MCL
 U - < MDL (Minimum Detectable Limit)

Attachment 5

IDAHO COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT
COLLEGE OF FORESTRY, WILDLIFE AND RANGE SCIENCE
UNIVERSITY OF IDAHO
MOSCOW, IDAHO 83843
(208) 885-6336


April 4, 1991

Clyde Cody
Department of Health and Welfare
Division of Environmental Quality
1410 N. Hilton, Suite 101
Boise, ID 83706-1253

Dear Clyde:

Attached you will find information you can use to calculate fish densities for sections of the St. Joe River up and downstream from Avery. You should be aware that the lower densities of cutthroat trout in the lower St. Joe River is at least partly due to high water temperatures. Most of the Cutthroat Trout move upstream to cooler areas in summer.

Sincerely,


Ted C. Bjorn
Assistant Leader

SW

RECEIVED

APR 10 1991

DIVISION OF
ENVIRONMENTAL QUALITY
BOISE FIELD OFFICE

COOPERATORS:




University of Idaho



PAL 002275

Transects in the ... River from Calder to Avery and
Avery to Prospector Ck. during August, 1989 and 1990.

Transects 29 - 35 = Calder to Avery
Transects 1 - 7 = Avery to Prospector Ck.

Trnsct No.	Trnsct Length(m)	Mean Width(m)	Surface Area(m2)	TOTAL COUNTED AUGUST 1989			
				CUTT	RAINBOW	BULL T	WF
29	96.0	7.6	731.5	0	0	0	3
30	57.0	9.5	541.5	1	0	0	1
31	92.0	7.6	701.0	0	1	0	5
32	100.0	8.0	800.0	1	0	0	5
33	87.0	8.0	696.0	1	6	0	8
34	166.0	8.0	1328.0	1	5	0	26
35	129.0	8.0	1032.0	3	1	0	11
1	148.0	37.6	5564.8	1	1	0	0
2	204.0	28.4	5793.6	4	2	0	129
3	59.4	12.5	743.0	10	0	0	14
4	40.0	12.8	512.0	8	0	0	9
5	135.0	25.1	3388.5	7	0	0	10
6	243.0	34.7	8432.1	2	12	0	27
7	134.0	32.1	4301.4	19	64	0	13

Trnsct No.	Trnsct Length(m)	Mean Width(m)	Surface Area(m2)	TOTAL COUNTED AUGUST 1990			
				CUTT	RAINBOW	BULL T	WF
29	96.0	7.6	731.5	0	1	0	10
30	57.0	9.5	541.5	0	2	0	1
31	92.0	7.6	701.0	2	2	0	5
32	100.0	8.0	800.0	0	2	0	7
33	87.0	8.0	696.0	5	20	0	108
34	166.0	8.0	1328.0	2	0	0	125
35	129.0	8.0	1032.0	2	6	0	52
1	148.0	37.6	5564.8	7	7	0	17
2	204.0	28.4	5793.6	13	17	0	217
3	59.4	12.5	743.0	NO DATA DUE TO ROAD CONSTRUCTION			
4	40.0	12.8	512.0	NO DATA DUE TO ROAD CONSTRUCTION			
5	135.0	25.1	3388.5	15	2	0	8
6	243.0	34.7	8432.1	5	91	0	57
7	134.0	32.1	4301.4	20	2	0	12

Fish Production Estimator (using August, 1990 data)

- 15 mile stream segment below Avery includes transects 31-35.
- These transects total 338 fish per 574 meters of stream.
- 15 miles = 24,135 meters

$$\frac{574 \text{ m (transects)}}{24,135 \text{ m (total)}} = \frac{338 \text{ fish (transects)}}{X \text{ fish (total)}}$$

$$574 \times = 8157630$$

$$X (\text{total fish}) = 14,212$$

$$\text{Divide by 15 miles} = 947 \text{ fish/mile}$$

Using an average length of 10-12 inches
and average weight of $\frac{3}{4}$ lb per fish

$$.75 \text{ lb} \times 947 \text{ fish/mile} = 710 \text{ lbs fish/mile}$$

**SITE INSPECTION REPORT
FOR THE
AVERY RAILROAD DUMP AND ROUNDHOUSE SITE
CERCLIS ID NO. IDD984666313**

Prepared for:

**Contract No. 68-W9-0054
Work Assignment No. 54-17-0JZZ
United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101**

Prepared by:

**URS Consultants, Inc.
1100 Olive Way, Suite 200
Seattle, Washington 98101**

URS Document Control No. 62760.05.20.245.15.b1

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ABBREVIATIONS AND ACRONYMS

ARCS	Alternative Remedial Contract Strategy
ARDR	Avery Railroad Dump and Roundhouse
BNA	base-neutral-acid extractable organics
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CMSPR	Chicago, Milwaukee, St. Paul and Pacific Railroad
CRDL	contract-required detection limit (for organic compounds)
CRQL	contract-required quantitation limit (for inorganic compounds)
EPA	United States Environmental Protection Agency
IATA	International Air Transport Association
IDEQ	Idaho Division of Environmental Quality
IDWR	Idaho Department of Water Resources
MCL	maximum contaminant level
MSL	mean sea level
MS	matrix spike
MSD	matrix spike duplicate
MW	monitoring well
NPL	National Priorities List
PA	preliminary assessment
PCB	polychlorinated biphenyl
QAPP	Quality Assurance Program Plan
RR	railroad
RPD	relative percent difference
SI	site inspection
SQL	sample quantitation limit
TSOP	Technical Standard Operating Procedures
URS	URS Consultants, Inc.
USFS	United States Forest Service
USGS	United States Geological Survey
VOC	volatile organic compound
WA	Work Assignment

Avery Railroad Dump and Roundhouse
SI Report
Contract No. 68-W9-0054
Work Assignment No. 54-17-0JZZ
ARCS EPA Region 10

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UNITS OF MEASURE

cfs	cubic foot per second
kg	kilogram
L	liter
lb	pound
mg	milligram
ppm	parts per million
μ g	microgram

1.0 INTRODUCTION

Pursuant to United States Environmental Protection Agency (EPA) Contract No. 68-W9-0054 and Work Assignment (WA) No. 54-17-0JZZ, URS Consultants, Inc. (URS) conducted a site inspection (SI) of the Avery Railroad Dump and Roundhouse (ARDR) site located in Avery, Idaho. The EPA SI process is intended to evaluate actual or potential environmental or public health hazards at a particular site relative to other sites across the nation for the purpose of identifying remedial action priorities. The SI process is intended to collect sufficient data to enable evaluation of the site's potential for inclusion on the National Priorities List (NPL) and, for those sites determined to be NPL candidates, establish priorities for additional action. The SI process is also intended to determine the potential for the site to pose a threat to public health or the environment and to document the potential for the release of hazardous constituents from the site into the environment. The SI process and this SI do not include extensive or complete site characterization, contaminant fate determination, or quantitative risk assessment. This SI was performed to collect site samples and evaluate the results in an effort to confirm or deny site characteristics and area receptor information identified in the preliminary assessment (PA) stage.

This document presents the results of the ARDR SI in the following sections:

- Section 1.0 Introduction - Summary of the purpose of the SI
- Section 2.0 Background - Site description and history summary
- Section 3.0 Potential Targets - Discussion of potential exposure pathways
- Section 4.0 Sampling Program - Description of sampling conducted
- Section 5.0 Sample Results and Discussion - Summary of data results
- Section 6.0 References - List of cited references

Avery Railroad Dump and Roundhouse
SI Report
Contract No. 68-W9-0054
Work Assignment No. 54-17-0JZZ
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Section 2.0
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2.0 BACKGROUND

Site Name: Avery Railroad Dump and Roundhouse
CERCLIS No. IDD984666313

Location: Avery Landing - St. Joe River Road
Avery, Idaho

Latitude: 47° 12' 13.65" North Longitude: 115° 49' 15" West

Legal: T45N R05E S15 NW 1/4 of the NW 1/4
T45N R05E S16 NE 1/4 of the NE 1/4

Site Owners: Potlatch Corporation
P.O. Box 386
St. Maries, Idaho 83861

Federal Highway Administration
Contact: Mr. Allan Stockman
610 E. 5th
Vancouver, Washington 98661
(206) 696-7751

Mr. David Thierault
Box 3322
Missoula, Montana 59806

Operator: The site is not operational.

Site Contact: Mr. Mike Fish, Construction Services Manager
Potlatch Corporation
P.O. Box 386
St. Maries, Idaho 83861
(208) 245-2585

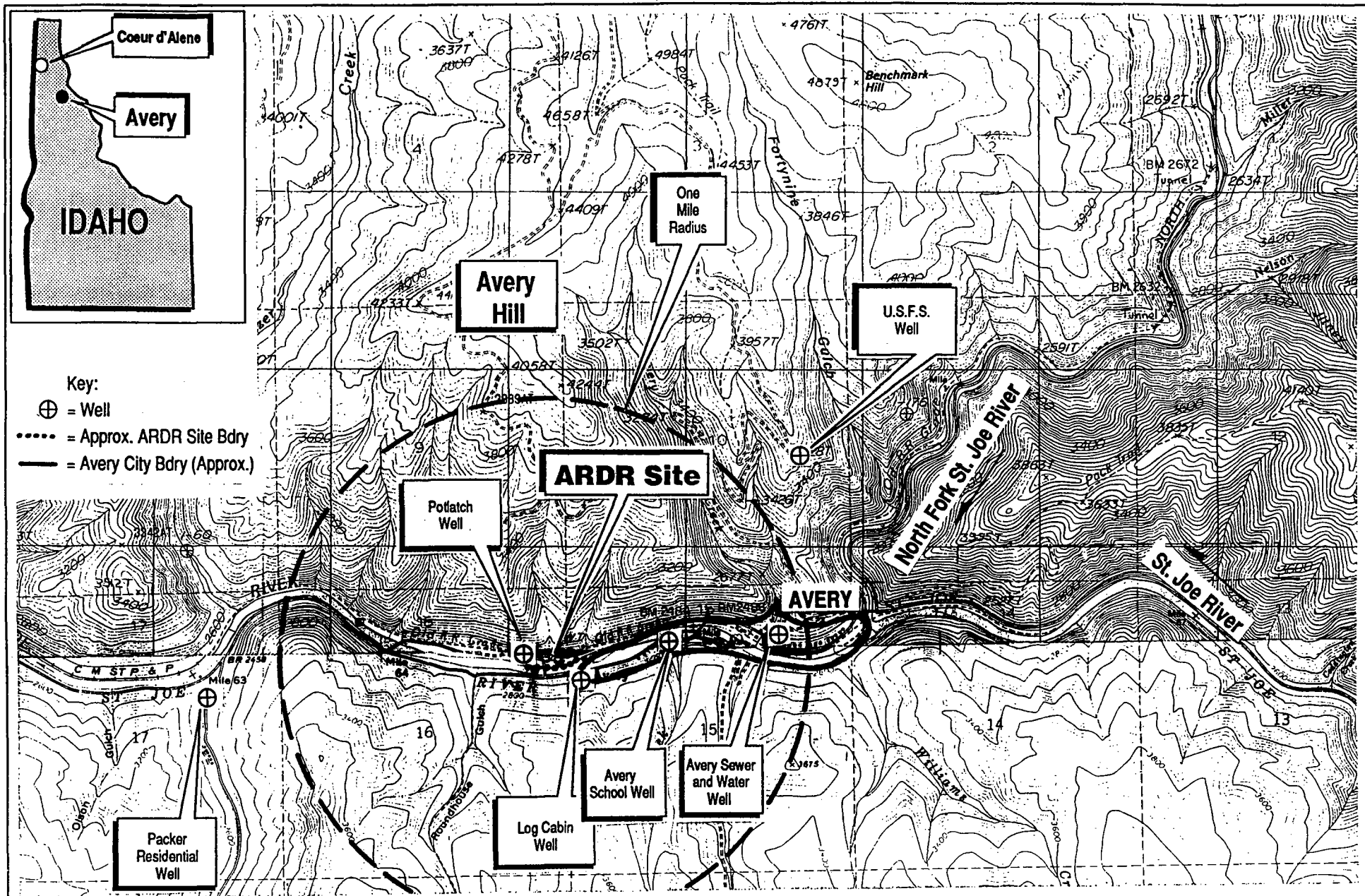
2.1 Site Location and Description

The ARDR site (approximately 7 acres) is located in northeastern Idaho in Shoshone County (Township 45 North, Range 5 East, Sections 15 and 16). The site is approximately 97 miles southeast of Coeur d'Alene, Idaho, and 46 miles east of St. Maries, Idaho. The ARDR site is about 1.2 miles west of the confluence of the St. Joe River and the North Fork of the St. Joe River and 0.75 mile west of the town of Avery, Idaho (Figure 2-1).

The Chicago, Milwaukee, St. Paul and Pacific Railroad (CMSPR) operated a rail yard on the site from 1909 until approximately 1977. The CMSPR retained ownership of the property until 1980 when its railroad holdings in northern Idaho, which included this parcel of land, were purchased by the Potlatch Corporation. At the time of this transaction, it was discovered that the easternmost 2 acres of the ARDR site were owned by David Thierault. The strip of land comprising the northern boundary of this property was sold to the Federal Highway Administration in 1986 for construction of the St. Joe River Road. Therefore, the ARDR site is owned by the Federal Highway Administration, Potlatch Corporation, and David Thierault.

The ARDR site lies at an elevation of approximately 2,540 feet above mean sea level (MSL). The St. Joe River Road and the foot of Avery Hill (peak elevation 4,417 feet MSL) lie along the northern border of the site (approximately 2,600 feet MSL). The site is bordered to the south by the St. Joe River (approximately 2,800 feet MSL). At the widest point, the distance across the site (from the St. Joe River Road to the St. Joe River), is approximately 300 feet. At the east and west ends of the site, the width of the property reduces to approximately 150 feet from the road to the river. The surface of the ARDR site is covered mostly with gravel, soil, or sparse vegetation. Buildings on the site include one on-site residence located on the western end of the site, several "camp" buildings on the western half of the site, and two old railroad buildings located in the central portion of the site. The eastern half of the site is shown in detail in Figure 2-2.

The site is located in a narrow river valley, with both commercial and residential areas nearby. The site itself is reportedly composed of fill materials that have been attributed to former railroad construction (IDEQ 1991a). Additional leveling and grading of the site was conducted by Potlatch after purchase of the property (Fish 1992). The well driller's log for the domestic well located on site, about 300 yards west of the site entrance, indicated approximately 18 feet of fill materials (IDWR 1979).



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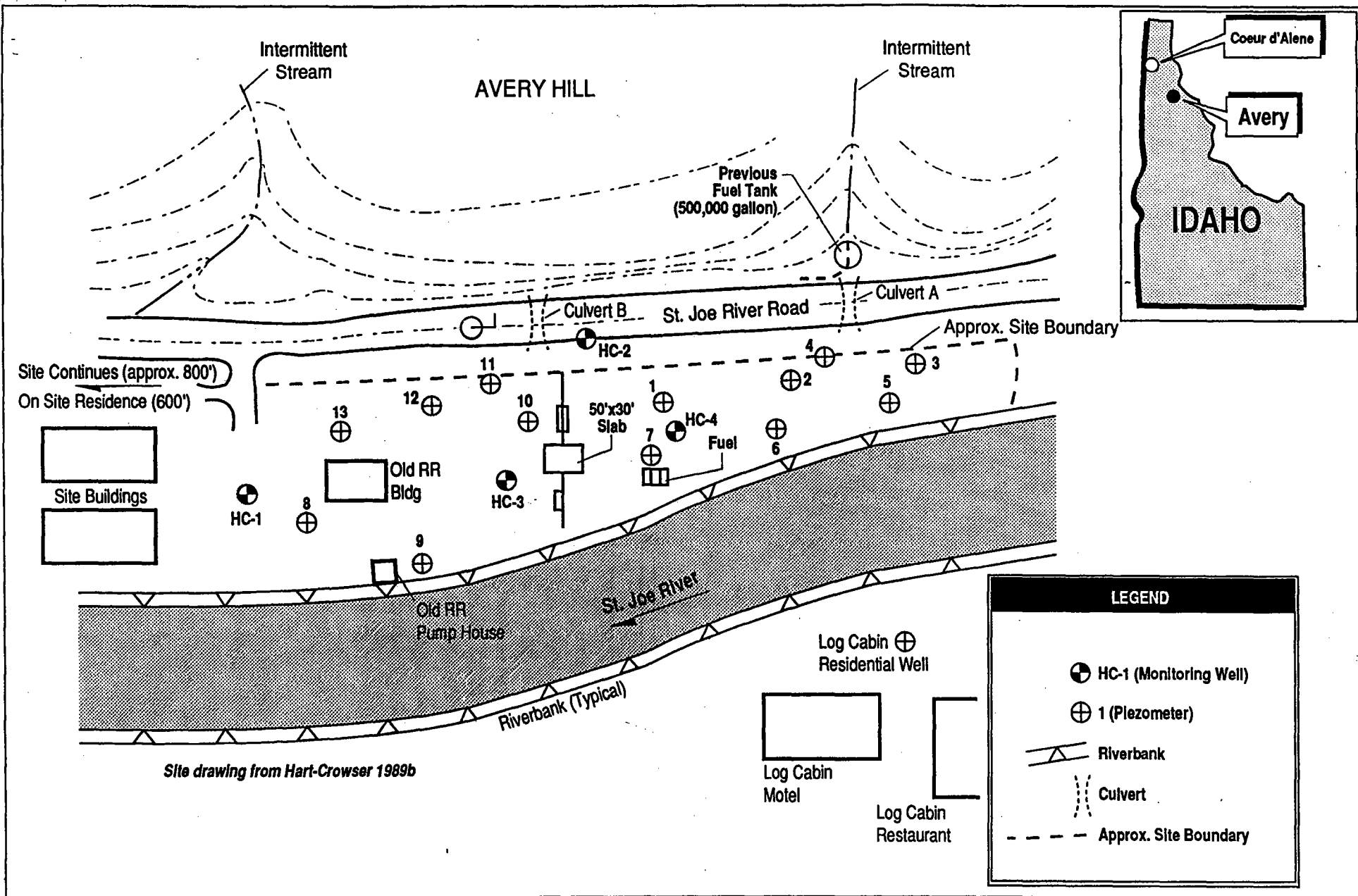


Scale in Miles

Source: U.S.G.S. Topographic Quads

Figure 2-1
Site Location Map

**Avery Railroad
Dump and
Roundhouse
Avery, Idaho**



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0 75 150
Scale In Feet

Figure 2-2
Site Map

Avery Railroad
Dump and
Roundhouse
Avery, Idaho

The St. Joe River Road, the north border of the site, is graded approximately 4 feet above the site. Two culverts divert runoff from Avery Hill under the roadway. One culvert (Culvert A on Figure 2-2) directs water from an intermittent stream, near the east end of the site, under the ARDR site to the St. Joe River. A second culvert (Culvert B on Figure 2-2) directs runoff from Avery Hill under the St. Joe River Road onto the central portion of the ARDR site. The ARDR site has an approximate 3 percent slope, with anticipated overland flow toward the south into the St. Joe River. The land immediately north, east, and west of the site is vacant and undeveloped. The St. Joe River is located immediately south of the site, and the opposite bank of the river is occupied by a restaurant and motel, the Log Cabin.

The residential population and commercial center of Avery are east of the ARDR site on both sides of the St. Joe River. The majority of the buildings in the town of Avery are spread along both the north and south banks of the St. Joe River for approximately 1 mile upstream (east) and 0.25 mile downstream (west). Six area wells serve the Avery population of approximately 100 permanent residents with an additional 60 to 80 seasonal workers (IDEQ 1991a). These wells are 1) the Log Cabin well located south of the St. Joe River, directly across from the eastern portion of the ARDR site; 2) the Avery elementary school well located on the south side of the St. Joe River approximately 0.25 mile east of the ARDR site; 3) the Avery Sewer and Water Department well, about 0.75 mile east of the ARDR site; 4) the United States Forest Service (USFS) well, 1.5 mile northeast of the ARDR site; 5) the Potlatch well, located approximately 300 yards west of the entrance into the ARDR site; and 6) the residential well, at the confluence of Fishhook Creek and the St. Joe River, approximately 1.0 mile west of the ARDR site. The approximate locations of these wells are shown in Figure 2-1. The closest permanently occupied building is located on site approximately 600 feet west of the site entrance. The western end of the site has been leased in the past to contractors housing workers in trailers. It was reported that a trailer park was located on this site from May through October of 1990 (Fish 1992).

2.2 Site Operations and Waste Characteristics

The ARDR site served as a switching station and light maintenance facility from 1909 until 1977. The CMSPR facility included a turntable, roundhouse, machine shop, fan house, engine house, boiler house, storehouses, coal dock, oil house, oil tanks (including a 500,000-gallon fuel oil tank), oil "sinks," various "drains," and a pumphouse (IDEQ 1991a). Before the property was purchased by the Potlatch Corporation in 1980, the

railroad removed most equipment and structures from the site, including the 500,000-gallon fuel oil tank (Fish 1992).

Since 1980, the ARDR site has been used by the Potlatch Corporation for staging, parking, and temporary log storage. "Camp" buildings (former railroad structures) on the site have been used by Potlatch employees for seasonal housing. Electrical connections are located on the site for temporary trailer use. In addition, the Potlatch Corporation allowed the Federal Highway Administration to use the site in 1986 for temporary housing during the construction of the St. Joe River Road (IDEQ 1991a). Other contractors, including the State of Idaho, and hunters (during elk and deer season) have used the property (some without requesting permission from the Potlatch Corporation) for seasonal or temporary housing and for a location to conduct maintenance on vehicles or equipment.

On-site waste generating activities by the CMSPR during operation of the railroad include train refueling, the use of solvents for cleaning engine parts or possibly hosing down locomotives, equipment maintenance, and possible on-site storage of transformers related to the electric railroad service (IDEQ 1991a). Other operations on the site since the Potlatch Corporation purchase include maintenance of equipment by Potlatch or the various site users, resulting in the potential for release of hazardous road construction materials (tar or asphalt). Site activities that may have contributed to the release of hazardous contaminants to the site and the surrounding area are summarized in Table 2-1.

Railroad operations were reported to have used a 500,000-gallon aboveground fuel oil tank for refueling the trains (IDEQ 1991a). The tank was reportedly located on the northeast end of the property in a gully. Fuel oil was stored and used at the site from 1909 until the railroad facility shut down operations in 1977. During the SI site visits, an intermittent stream (shown in Figure 2-2) was observed to be located in the gully where this tank was located (URS 1992a). A 1915 plat map of the site indicated the presence of a "50 foot oil service tank" where this 500,000-gallon fuel oil tank was reported to have been located (Appendix A). The volume of the tank was not shown on the map. The 1915 plat map showed an 8-inch pipe running from the tank to other site structures, including a smaller oil tank along the riverbank. In addition to this pipe that may have been used to transport the fuel oil to other site facilities, a 1.5-inch steam pipe is shown on the plat map. Common railroad operations in the 1900s involved the use of "Bunker C" oil, a thick oil for fueling trains. This type of oil has to be heated in order to be piped to any other location (URS 1992a). That may be the reason for the steam pipe

**Table 2-1
 Site Operations**

Operator	Dates of Operation	Potential Activity	Potential Contaminants
CMSPR	1909-1977	Train fuel oil, site storage of fuel oil Cleaning engine parts and possibly hosing down the locomotive with solvents ^a On-site transformer storage	Petroleum hydrocarbons Halogenated volatile compounds and waste oils containing metals PCB-laden oils
Potlatch	1980-1992	Log storage, including possible maintenance of transport equipment on site Site rental to various contractors for worker housing, possible maintenance activities on site	Solvents, waste oils containing metals Solvents, waste oils containing metals
Federal Highway Administration	1986	Worker housing and possible equipment maintenance during highway construction	Solvents, waste oils containing metals
State of Idaho	1992	Eastern end of site used for gravel storage and mixture of gravels and asphalt during road construction, equipment maintenance observed on site	Solvents, waste oils containing metals

Source: IDEQ 1991a, URS 1992a

^aNot a documented site activity, but common railroad practice

indicated on the plat map. The fuel oil tank was reportedly removed from the site by the CMSPR after railroad operations ceased (Fish 1992). No records were discovered documenting the dismantling of railroad operations at this site. The railroad files included in the land purchase did not include documentation of activities after 1977 (Fish 1992).

The actual use or alleged improper disposal of solvents has not been documented at this site. However, the use of solvents for cleaning engine parts and even hosing down the locomotive was common practice at similar railroad facilities containing both a turntable and roundhouse (IDEQ 1991a). Interviews with former CMSPR employees revealed that the heavy maintenance of equipment was conducted at the railroad facility in Deer Lodge, Montana. Reportedly, the ARDR site was used for minor repairs (IDEQ 1991a), which may have resulted in the release of solvents, waste oils, and so forth onto the site.

The CMSPR facility in Avery was the end of the electric rail line heading east. A transformer substation was located near the Avery Sewer and Water well shown on Figure 2-1 (approximately 0.75 mile east of the site). This substation reportedly included tanks or vaults for storing transformer oil as well as the transformers (IDEQ 1991a). The use of PCB oils has not been documented. Former CMSPR employees recalled storing transformers on the ARDR site; the exact location or condition of these transformers was not known (IDEQ 1991a). Analytical data collected in 1989 indicated PCB in the floating layer of oily material that lies on top of the water column under the site (Hart-Crowser 1989a).

2.3 Investigative and Regulatory History

The regulatory history of the CMSPR facility is not accurately documented. Files were submitted to Potlatch from the railroad when the properties were purchased. Potlatch reviewed the files for information concerning deeds, transactions, and rights-of-way. The remaining file material does not contain information concerning any hazardous activities at this site (Davis 1993).

The EPA Idaho Operations Office reviewed the ARDR site as a potential hazardous waste site in August of 1988 (EPA 1988a). This review indicated that the site showed visible seepage running into the St. Joe River. The railroad operations were reported to have buried creosote-treated railroad ties at the site and the operations were suspected to have buried waste solvents, fuels, and old transformers at the site.

Potlatch contracted with Hart-Crowser to install groundwater monitoring wells and collect samples from the ARDR site. A 4-foot-thick free-phase hydrocarbon layer was measured in monitoring well HC-4. Hart-Crowser conducted two sampling events at this site: on July 26, 1989, a sample was collected of the floating oil layer in monitoring well (MW)-11 and on August 23, 1989, samples were collected of purged water from site

monitoring wells HC-1, HC-2, HC-3, and HC-4. The Hart-Crowser reports concluded that the wells HC-1 and HC-2 did not appear to be impacted by the petroleum hydrocarbons and the majority of the free-phase petroleum appears to lie beneath the eastern part of the site. The results from samples collected from these site wells are provided in Table 2-2 (Hart-Crowser 1989a, Hart-Crowser 1989b). Figure 2-2 shows the location of the Hart-Crowser wells.

Table 2-2
ARDR Site Historical Sample Data

Parameter	Water Sample Collected July 26, 1989, from MW-11	Purged Water Sample Collected August 23, 1989, from HC-3	Purged Water Sample Collected August 23, 1989, from HC-4
Arsenic	NA	0.009 ppm	ND
Cadmium	ND	ND	ND
Chromium	20 ppm	ND	1 ppm
Lead	30 ppm	ND	5 ppm
Total Petroleum Hydrocarbons	ND	ND	ND
PCB	1.4 ppm	NA	NA

Source: Hart-Crowser 1989a, Hart-Crowser 1989b

Notes:

NA - Not analyzed

ND - Not detected

ppm - parts per million

In addition to the analytical results from the Hart-Crowser investigation, a trench recovery system was proposed by Hart-Crowser for capture of the free-phase product currently moving into the river. This system proposes to dig a recovery trench along the riverbank and dispose of the recovered oily material through burning. The recovery system design was presented by Potlatch to the Idaho Department of Environmental Quality (IDEQ) to identify the magnitude of the problem and the cost of remediation

(Fish 1991, IDEQ 1991a). Following a meeting between the IDEQ, Federal Highway Administration, and Potlatch, comments were submitted from IDEQ to Potlatch concerning the changes requested for the recovery system. The IDEQ indicated that upon completion of the requested changes, the recovery system "would be satisfactory technology to attempt to remove free phase product from the Avery Landing site" (IDEQ 1991b). At the time of the SI sampling (August 1992), Potlatch had not initiated construction of the recovery system.

In May of 1991, the IDEQ submitted a PA of the ARDR site to EPA Region 10 (IDEQ 1991a). The PA reviewed the site history and evaluated the site based on its potential to release hazardous contaminants to the environment and the subsequent exposure of area residents to those potential hazardous contaminants. Based on the insufficient information available to characterize the site, a sampling SI was recommended. The results of this SI sampling are presented and discussed in Section 5.

3.0 POTENTIAL TARGETS

3.1 Groundwater Pathway

Soils in the Avery area consist of the Pywell Series (organic soil, very poorly drained) in the river bottoms and the Vay Series (erodible volcanic ash surface soil) on the mountain slopes (IDEQ 1991a). The ARDR surface site soil may not fall into either of these categories because it is composed mainly of fill materials.

The underlying water-bearing rock formations in the Avery area consist of Belt Formation Shales. The well log from the on-site Potlatch well (located approximately 300 yards west of the site entrance) indicates the top 18 feet of soil are composed of fill material (Table 3-1). The information in this well log is not consistent with other well logs from the nearby area; available well logs are provided in Appendix B.

**Table 3-1
 Potlatch Well Log**

Depth below grade surface	Material	Depth to Water
0-18 feet	Fill	Depth to first water in this layer
18-30 feet	Cemented gravel	Static water level = 20 feet
30-31 feet	Soft area	Water encountered
31-57 feet	Brown shale	
57-58 feet	Fractured area	Water encountered
58-60 feet	Brown shale	
60-61 feet	Fractured area	Water encountered
61-64 feet	Brown shale	
64-67 feet	Fractured areas	Water encountered

Source: IDEQ 1991a

The geologic information provided in other area well logs indicates a groundwater depth of 24 feet. Of the well logs reviewed, only the Potlatch well indicated a series of layers of confining shale. Other wells in the area indicated only two or three layers of distinctive materials. Of these layers, a surface layer of shale was shown to have some confining effect on the water-bearing zone. The well driller's report for the Packer well, which appears to be representative of the area, is depicted in Table 3-2.

Table 3-2
Packer Well Log

Depth below grade surface	Material	Water
0-16 feet	Clay and shale	Static water level = 10 feet
16-24 feet	Shale	
24-175 feet	Shale	Depth to first water = 24 feet

Source: IDEQ 1991a

The information in available well logs indicates that the Avery area draws its water from a water-bearing unit that is overlaid by a 24-foot confining layer. This is based on the static water level information provided in the well logs. The ARDR site well log presents a perched water layer above the confining layer described in other well logs. This perched water may be a result of the 18 feet of fill that comprises the site. There is no evidence that the perched layer under the ARDR site is hydrologically isolated from the water-bearing zone indicated in the residential well logs.

Area drinking water wells within a 4-mile radius of the ARDR site are summarized in Table 3-3 and shown in Figure 2-1. There is no known use of local groundwater for irrigation or commercial purposes. The populations assigned to the wells in Table 3-3 were estimated by IDEQ based on conversations with the well owner (IDEQ 1991a). Within 0.25 mile of the ARDR site are two residential drinking water wells (Potlatch and Log Cabin). The Potlatch well provides water to an estimated maximum seasonal population of 20 people. The Log Cabin well provides water to one residence and the restaurant, bar, and motel, as well as eight trailers (available for seasonal use). From 0.25 to 0.5 mile from the site, the Avery school well provides water to 21 residents and 29 children and school personnel. At a distance of 0.5 to 1 mile from the site, the Avery Sewer and Water Department well provides water to the residential population on the

Table 3-3
Drinking Water Populations

Distance from site	Number of wells	Name of Well	Estimated population (range includes seasonal high)
0 - 1/4 mile	2	Potlatch and Log Cabin	8 - 48
1/4 - 1/2 mile	1	Avery School	21 - 50
1/2 - 1 mile	1	Avery Sewer and Water	65 - 75
1 - 2 miles	2	USFS and Packer	4 - 12
2 - 3 miles	0	none	
3 - 4 miles	0	none	
Total	6		98 -185

Source: IDEQ 1991a

north side of the river, estimated to range from 65 to 75 people. From 1 to 2 miles from the ARDR site, the USFS well provides water to a seasonal crew of 10 and the Packer well provides water to one residence.

Direction and rate of groundwater flow at this site have not been established. The groundwater flow in this valley may generally be toward the west following the land contours, whereas local and surface patterns may flow toward the St. Joe River.

The average annual precipitation for the Avery area is 36.65 inches; the 2-year, 24-hour rainfall is 1.8 inches. The average annual net precipitation was calculated to be 22.83 inches (Appendix C). The greatest amount of precipitation falls during the winter months.

The results of the groundwater sampling conducted during this SI are discussed in Section 5.

3.2 Surface Water Pathway

The ARDR site lies along 2,800 feet of the north bank of the St. Joe River. The St. Joe River is the only water body 15 miles downstream of the site. The monthly flow averages for the St. Joe River, measured at Calder (30 miles downstream), vary from a low of 500 cubic feet per second (cfs) to a high of 8,560 cfs. The average annual flow for the St. Joe River is 2,408 cfs (IDEQ 1991a).

No obvious overland surface water migration pathways across the site to the river were observed (URS 1992a). Culvert B (Figure 2-2) appeared to pond on site along the south side of the St. Joe River Road (URS 1992a). The site slopes at an approximate 3 percent grade toward the river. Several of the railroad buildings remain on the property, including what is assumed to be the pumphouse used by the railroad to draw water from the river. Former railroad operations on the site may have released hazardous materials to the river. There was no visual evidence that engineered systems (impervious flooring and containment walls under and around tanks for spill collection) for the containment of hazardous material spills were present at the site, which would have reduced the potential for release to the river (URS 1992a).

Former on-site operations have contributed to the presence of oily seeps occurring along the central 1,000 feet of the site riverbank. The largest seep is located just west of the former railroad pumphouse and was observed to cover an area of approximately 30 square feet of river bank (URS 1992a). This seep of oily material was observed entering the river from the site during low flow seasons (IDEQ 1991a, URS 1992a). The location of this seep is under water during high flow seasons, but the release of the oily substance is assumed to occur during the entire year (URS 1992a). A floating layer of oily material was observed on the perched water table at this site (Hart-Crowser 1989a, IDEQ 1991a, URS 1992a). The perched groundwater on site may be providing a conduit for transport of the oily material to the river.

The St. Joe River is not known to be used as a source of drinking or irrigation water within 15 miles downstream of the ARDR site. The river is used for sport fishing and is classified by the State of Idaho as a "Special Resource Water." The State of Idaho designated "Special Resource Waters" in 1980 based on the classification of a water in any of six categories: outstanding high quality, unique ecological system, outstanding recreational or aesthetic quality, need for intensive protection of the water, presence of water in a national or state park or wildlife refuge or a portion of the national wild and scenic river system, and need for maintaining an existing or beneficial use (Shumar

Based on a 1990 fish count of the St. Joe River, the average fish production is estimated to be 710 lb/mile (IDEQ 1991a). National Wetland Inventory maps are not yet available for this area of Idaho and no wetlands have been delineated 15 miles downstream of the ARDR site (Allen 1992). Floodplain evaluations have not been conducted in this area of Shoshone County (IDEQ 1991a). Historical reports have indicated that the highest river level recorded did not flood this site (IDEQ 1991a). The site lies approximately 15 feet above the river bottom (URS 1992a).

River sediment sampling results for this SI are discussed in Section 5.

3.3 Soil Exposure Pathway

This site is seasonally used for temporary housing for as many as 20 people (IDEQ 1991a). There is one on-site residence that is occupied by one person. This residence is located on the western third of the property approximately 600 feet west of the site entrance. There are no schools or daycares within 200 feet of the site. There are no known sensitive environments located within a 4-mile radius of the site. Access to this site is not restricted; there is no fence around the property. Observations during field sampling documented access to the site by area wildlife (mule deer) and residents (URS 1992a). The maximum residential population within a 4-mile radius of the ARDR site is estimated in Table 3-4.

Results from the soil sampling conducted during this SI are discussed in Section 5.

3.4 Air Pathway

Discolored soils and stains were observed along the riverbank and at several locations on the site. Photographic documentation of the discolored soils are provided in Appendix D. The observed discolored soils provide the potential for release of hazardous contaminants from the site into the air. No containment was observed at this site to reduce the potential for release of contaminants (URS 1992a).

No wetlands or sensitive environments have been identified within a 4-mile radius of the site. The number of residents within 4 miles of this site are tabulated in Table 3-4. Air sampling was not conducted during this SI.

Table 3-4
Residential Population

Distance from Site	Population
On site	20 ^a
0 - 1/8 mile	10
1/8 - 1/4 mile	18
1/4 - 1/2 mile	50
1/2 - 1 mile	75
1 - 2 miles	12
2 - 3 miles	0
3 - 4 miles	0
Total	185

^aEstimated number of maximum seasonal residents

Source: IDEQ 1991a

4.0 SAMPLING PROGRAM

4.1 Sampling Objectives

The sampling conducted for this SI was intended to gather sufficient data to enable evaluation of the site's potential for inclusion on the NPL. Site-specific sampling objectives for the ARDR SI included identifying the presence or absence of detectable CERCLA contaminants in area drinking water wells, river sediments, groundwater at the site, site oily seep, site surface soils, and site subsurface soils (URS 1992b).

4.2 Sampling Methods

The media-specific sampling procedures conducted during the sampling of the ARDR site are consistent with methodologies described in the URS Quality Assurance Program Plan (QAPP) (URS 1990a) and Technical Standard Operating Procedures (TSOP) (URS 1990b) for ARCS contract activity, as well as those described in the EPA Compendium of Superfund Field Operations Methods (EPA 1987). Table 4-1 contains a detailed list of the samples collected during the sampling at the ARDR site. The sampling methods are described in the following sections. The residential well and river sediment sample locations are shown in Figure 4-1. The on-site soil and oily seep sample locations are shown in Figure 4-2.

4.2.1 Residential Groundwater Samples (TSOP 5.1)

The well sample collected from the Avery Sewer and Water well was collected as a background water sample to characterize the area groundwater. Residential groundwater sampling at the Avery elementary school well (WSW01 and WSW02) was conducted to evaluate the potential for a health concern in the Avery area. These wells do not chlorinate the water supply. This groundwater sampling was intended only as a screening of wells near the site.

These sampling locations are shown in Figure 4-1.

Table 4-1
Summary of Sample Types, Numbers, and Location

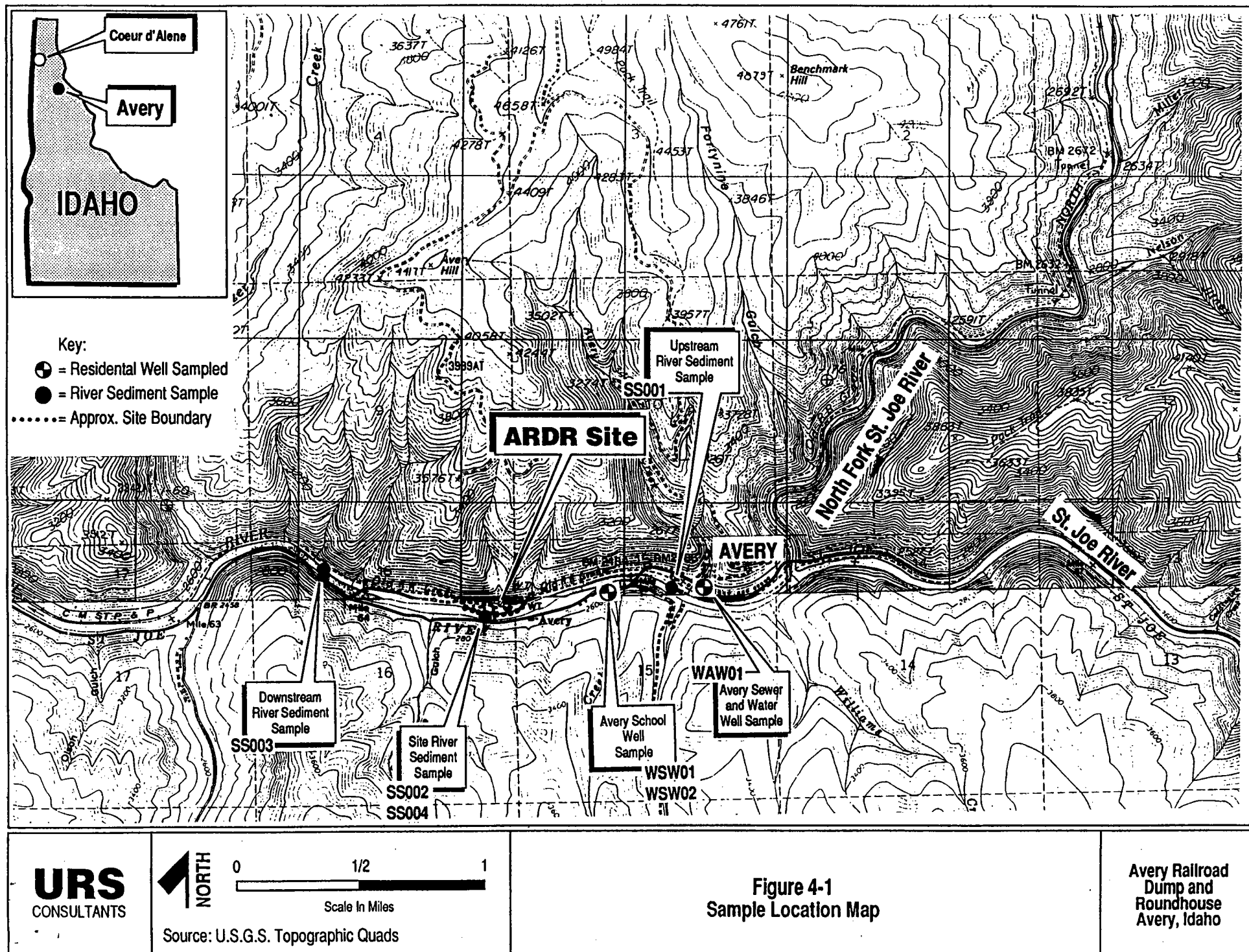
Sample Number	Sample Type	Location	Objective	Date	Time
WSW01	Groundwater	Avery elementary school well	Identify the presence of contaminants in the school water	08/26/92	0837
WSW02	Groundwater	Duplicate of WSW01	Test reliability of sampling procedures	08/26/92	0837
WAW01	Groundwater	Avery Sewer and Water well	Provide background comparison	08/26/92	0915
WHC01	Groundwater	On-site monitoring well HC-3	Identify the presence of contaminants in the groundwater below the site	08/26/92	1020
WTB01	Water	VOA trip blank collected from available de-ionized water	Identify the possible contamination of sample containers while in transit to the laboratory	08/26/92	0820
SS001	Sediment	Upstream river sediment collected approximately 1/2 mile upstream of the eastern end of the site	Provide a background comparison for the constituents in the river sediments	08/25/92	1230
SS002	Sediment	River sediment collected along the center of the site just downstream of the visible oil seep	Identify the contaminants in the river sediments	08/25/92	1100
SS003	Sediment	Downstream river sediment collected approximately 1/4 mile downstream of the oil seep	Identify the presence of contaminants downstream of the site	08/25/92	1025

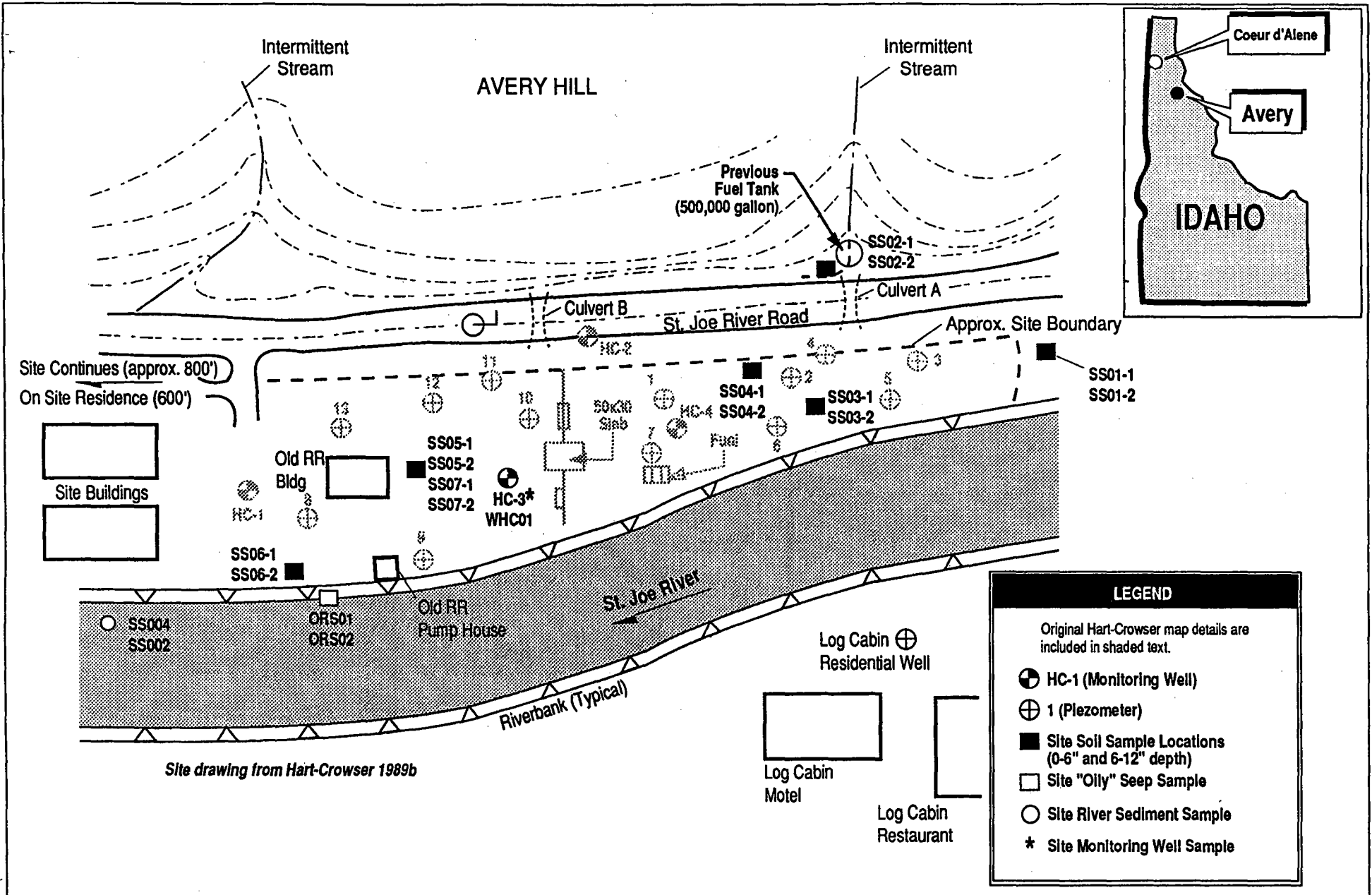
Table 4-1 (Continued)
Summary of Sample Types, Numbers, and Location

Sample Number	Sample Type	Location	Objective	Date	Time
SS004	Sediment	Duplicate of the site river sediment (SSD02)	Test reliability of sampling procedures	08/25/92	1130
ORS01	Oily Sediment	Oil seep material sampled from the site riverbank	Provide information on the type of contaminants present in the oil seep	08/25/92	1200
ORS02	Oily Sediment	Duplicate of the oily seep (ORS01)	Test reliability of sampling procedure	08/25/92	1200
SS01-1	Soil	Soil sample (0-6") collected from the easternmost end of the site	Provide information on the type of contaminants present in the site fill material	08/26/92	1100
SS01-2	Soil	Soil sample (6-12") collected from the easternmost end of the site	Provide information on the type of contaminants present in the site fill material	08/26/92	1110
SS02-1	Soil	Soil sample (0-6") collected from the ground near the reported location of the 500,000-gallon fuel tank	Provide information on the type of contaminants present	08/26/92	1135
SS02-2	Soil	Soil sample (6-12") collected from the ground near the reported location of the 500,000-gallon fuel tank	Provide information on the type of contaminants present	08/26/92	1135
SS03-1	Soil	Soil sample (0-6") collected from the ground near a pile of railroad ties	Provide information on the type of contaminants present	08/26/92	1145
SS03-2	Soil	Soil sample (6-12") collected from the ground near a pile of railroad ties	Provide information on the type of containments present	08/26/92	1145

Table 4-1 (Continued)
Summary of Sample Types, Numbers, and Location

Sample Number	Sample Type	Location	Objective	Date	Time
SS04-1	Soil	Soil sample (0-6") collected from the current site road surface	Provide information on the type of contaminants present	08/26/92	1200
SS04-2	Soil	Soil sample (6-12") collected from the current site road subsurface	Provide information on the type of contaminants present	08/26/92	1200
SS05-1	Soil	Soil sample (0-6") collected from the ground near the location of former railroad buildings	Provide information on the type of contaminants present	08/26/92	1210
SS05-2	Soil	Soil sample (6-12") collected from the ground near the location of former railroad buildings	Provide information on the type of contaminants present	08/26/92	1210
SS06-1	Soil	Soil sample (0-6") collected from the oily seep along the riverbank	Provide information on the type of contaminants present	08/26/92	1230
SS06-2	Soil	Soil sample (6-12") collected from the oily seep along the riverbank	Provide information on the type of contaminants present	08/26/92	1230
SS07-1	Soil	Duplicate of SS05-1	Test reliability of sampling procedures	08/26/92	1210
SS07-2	Soil	Duplicate of SS05-2	Test reliability of sampling procedures	08/26/92	1210





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0 75 150
Scale In Feet

Figure 4-2
On-Site Sample Location Map

**Avery Railroad
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4.2.2 Site Monitoring Well Groundwater Samples (TSOP 5.1 and 3.6)

One on-site monitoring well water sample (WHC01) was collected from on-site well HC-3 (Figure 4-2) to characterize the groundwater below the "oily" layer floating on the perched groundwater at the site, as described in the Field Sampling Plan (URS 1992b). The well was not purged and a sample was not collected of the oily layer on the groundwater. The thickness of the oily layer was not measured. Previous sampling at this site measured a 4-foot layer of oily substance in the on-site monitoring wells (Hart-Crowser 1989a).

4.2.3 River Sediment Samples (TSOP 5.5)

River sediment samples were collected to identify the presence of contaminants in the streambed. Three locations along the St. Joe River were sampled: downstream (SS003), along the site (SS002 and SS004), and upstream (SS001) (Figures 4-1 and 4-2). These samples were collected from areas of sediment accumulation, the inside of stream meanders, and in quiet shallow areas, or low-velocity zones. The upstream river sediment sample was collected to identify background conditions. The site river sediment sample was collected just downstream of the observed oily seep (approximately 20 feet).

4.2.4 Site Soil Samples (TSOP 5.4)

As detailed in the Field Sampling Plan, on-site soil samples were collected from six locations, at two depths: zero to 6 inches and 6 to 12 inches (Figure 4-2) (URS 1992b). Sampling locations were selected based on information from the PA Report; the site plat map (Appendix A), which identifies approximate areas of former railroad operations; and from the initial site visit, which documents areas of visible staining. One soil sampling location was designated to be the on-site background soil sample (surface SS01-1, subsurface SS01-2). This sample was collected from a location on the easternmost end of the site along the river bank. This sample was intended to provide a representation of the type of contaminants that are present in the site fill materials.

Surface soil sample SS-01 and subsurface soil sample SS-02 were intended to be used as background. Reported data for these samples contain high concentrations of semivolatile compounds and the subsurface background soil sample reported a PCB concentration of 230 ppb. These data indicate that the soil samples intended as background during the planning phase of this investigation have been influenced by

activities at this site. Therefore, these samples are not appropriate for use as background. As an alternative, the least contaminated on-site soil samples, SS02-1 and SS02-2, were designated as background for site soils. These soil samples were collected from the area where the railroad fuel tank was formerly located. The results from these site soil samples were compared to the remaining on-site surface and subsurface soil samples to define the significant concentrations of particular substances. The remainder of this document will refer to SS02-1 and SS02-2 as background; SS01-1 and SS01-2 will be referred to as eastern site soil samples.

The remaining on-site soil samples were taken of discolored soils near a stack of creosote railroad ties (surface SS03-1, subsurface SS03-2); from current site roadway soil (surface SS04-1, subsurface SS04-1); next to former railroad buildings (surface SS05-1 and SS07-1, subsurface SS05-2 and SS07-2); and along the top of the riverbank (surface SS06-1, subsurface SS06-2).

4.2.5 Site Seep Samples

Two samples were collected of the oily seep (ORS01 and ORS02) that was observed leaching from the site into the river (IDeq 1991a). The approximate location of this seep is identified in Figure 4-2.

4.3 Sample Analytical and Handling Requirements

Sample analytical requirements for the ARDR SI are summarized in Table 4-2. Included are descriptions of requested analytes, the analytical programs used, sample preservation techniques, and maximum sample holding times. Analytical methods and bottle requirements for samples collected during this investigation are described in the EPA's Users Guide to the Contract Laboratory Program (EPA 1988b). All samples were analyzed for the specified compounds and analytes detailed in the Field Sampling Plan (URS 1992b).

Analytical quality control analyses included matrix spike analyses, surrogate analyses, duplicate analyses, and method blank analyses. A summary of precision, accuracy, and completeness for this field sampling program is presented in Appendix E. All samples intended for analysis through the EPA Region 10 Laboratories were handled and documented in accordance with procedures specified in EPA's Users Guide to the Contract Laboratory Program (EPA 1988b) and National Enforcement Investigations

Table 4-2
Sample Analytical Requirements

Sample Matrix	Number of Samples Collected	Sample Location	Analytical Requirements	Analytical Program	Preservation Technique	Maximum Holding Times
Groundwater	2	See Figures 4-1 and 4-2	VOCs BNAs Pesticide/PCBs Total Metals	EPA Manchester EPA Manchester EPA Manchester EPA Manchester	HCl, Ice Ice Ice HNO ₃ , Ice	14 days 7 days 7 days 6 months/28 days for mercury
	1	Background	VOCs BNAs Pesticide/PCBs Total Metals	EPA Manchester EPA Manchester EPA Manchester EPA Manchester	HCl, Ice Ice Ice HNO ₃ , Ice	14 days 7 days 7 days 6 months/28 days for mercury
	2	Quality Control (Trip blank and 1 duplicate)	VOCs BNAs Pesticide/PCBs Total Metals	EPA Manchester EPA Manchester EPA Manchester EPA Manchester	HCl, Ice Ice Ice HNO ₃ , Ice	14 days 7 days 7 days 6 months/28 days for mercury
Soil/Sediment	13	See Figures 4-1 and 4-2	VOCs BNAs Pesticide/PCBs Total Metals	EPA Manchester EPA Manchester EPA Manchester EPA Manchester	Ice Ice Ice Ice	14 days 7 days 7 days 6 months/28 days for mercury
	3	Background for surface soil, subsurface soil, and river sediments	VOCs BNAs Pesticide/PCBs Total Metals	EPA Manchester EPA Manchester EPA Manchester EPA Manchester	Ice Ice Ice Ice	14 days 7 days 7 days 6 months/28 days for mercury
	4	Quality Control (4 duplicates)	VOCs BNAs Pesticide/PCBs Total Metals	EPA Manchester EPA Manchester EPA Manchester EPA Manchester	Ice Ice Ice Ice	14 days 7 days 7 days 6 months/28 days for mercury

Source: URS 1992b

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Center Policies and Procedures (EPA 1985). Specific chain-of-custody procedures were followed in accordance with EPA Region 10 requirements. Sample packaging conformed with applicable Department of Transportation Regulations (49 CFR 171-177) and International Air Transport Association guidelines (IATA 1987). All samples were shipped via an overnight delivery service to the laboratory for analysis within 48 hours of collection.

Samples collected from the site oily seep were anticipated to require dilution in order to identify the lower limit concentrations of contaminants. It was important for this project to identify the presence of higher concentration contaminants at levels that were not estimates due to high dilution. Therefore, the samples were requested to be analyzed to accurately identify the higher concentration contaminants. Laboratory Special Analytical Services protocol for the oily sample was included in the sampling plan (URS 1992b).

5.0 SAMPLE RESULTS AND DISCUSSION

All samples collected during this investigation were analyzed for volatile organic, semivolatile organic, pesticide and polychlorinated biphenyl (PCB) compounds, and total metal analytes as specified in the Field Sampling Plan for the Avery Railroad Dump and Roundhouse (URS 1992b).

A summary of the data quality objectives for this site is presented in Appendix E. The laboratory data reports and corresponding data validation reports are provided in Appendix F. Photographic documentation of the site visit and field sampling at the ARDR site is provided in Appendix G.

During the data evaluation process, the conditions used to define an "observed release" of a particular substance to any of the matrices sampled are summarized in Table 5-1. The discussions of site data in Sections 5-2 through 5-5 use the term "significant" based on the criteria described in Table 5-1.

Based on EPA Region 10 policy, aluminum, calcium, iron, magnesium, potassium, sodium, and zinc (common earth crust elements) are generally used only in water mass tracing, which is beyond the scope of this report. Although these elements are included in the tables, the data are not evaluated against the criteria in Table 5-1.

5.1 GROUNDWATER

Groundwater results are provided in Table 5-2.

Residential groundwater sample WAW01 is designated as background and was collected approximately 0.75 mile east of the ARDR site. The background designation was due to its location upgradient of the suspected direction of regional groundwater flow. This sample (WAW01) was used for comparison to the school well (WSW01 and WSW02) and the on-site monitoring well (WHC01).

The use of a drinking water supply well (WAW01) for comparison to the on-site monitoring well (WHC01) is not technically appropriate. The drinking water well is constructed differently, draws water from a lower aquifer, and is regularly pumped. The

Table 5-1
Significance Criteria for Chemical Analysis

Sample Measurement < Sample Quantitation Limit^a
No observed release is established; the result is not identified as "significant."
Sample Measurement > Sample Quantitation Limit^a
An observed release or "significant" result is established as follows:
If the background concentration is not detected (or is less than the detection limit), an observed release or significant result is established when the sample measurement equals or exceeds the sample quantitation limit ^a .
If the background concentration equals or exceeds the detection limit, an observed release or significant result is established when the sample measurement is three times or more above the background concentration.

^aIf the SQL cannot be established, determine if there is an observed release as follows:

- If the sample analysis was performed under the EPA CLP, use EPA CRQL in place of the SQL.
- If the sample analysis is not performed under the EPA CLP, use the detection limit in place of the SQL.

Source: 40 CFR, Part 300, Hazard Ranking System Final Rule, 1990

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Table 5-2
Water Sample Results, Avery, Idaho
August 26, 1992

Substance Detected (µg/L)	Avery Sewer and Water Well - Off-Site Background		Avery Elementary School Well - Off Site		Avery Elementary School Well - Off Site (duplicate)		On-Site Monitoring Well (HC-3)		Safe Drinking Water Act Standard	
	WAW01	Qualifier	WSW01	Qualifier	WSW02	Qualifier	WHC01	Qualifier	MCL	Footnote
Volatile Organics										
Benzene	1	U	1	U	1	U	20		5	F
Naphthalene	1	U	1	U	1	U	87			NS
Semivolatile Organics										
Acenaphthene	2	U	2	U	2	U	54			NS
Phenanthrene	2	U	2	U	2	U	230			NS
Fluorene	2	U	2	U	2	U	150			NS
Naphthalene, 1-Methyl-	2	U	2	U	2	U	840			NS
2-Methylnaphthalene	2	U	2	U	2	U	630			NS
Pyrene	2	U	2	U	2	U	19	J		NS
Fluoranthene	2	U	2	U	2	U	15	J		NS
Metals										
Calcium	30,200		37,600		37,600		63,500			NS
Magnesium	6,370		7,700		7,720		30,200			NS
Sodium	4,700		4,220		4,180		14,800			NS
Potassium	1,800	U	2,200	U	2,210	U	8,460			NS

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Table 5-2 (Continued)
Water Sample Results, Avery, Idaho
August 26, 1992

Substance Detected (µg/L)	Avery Sewer and Water Well - Off-Site Background		Avery Elementary School Well - Off Site		Avery Elementary School Well - Off Site (duplicate)		On-Site Monitoring Well (HC-3)		Safe Drinking Water Act Standard	
	WAW01	Qualifier	WSW01	Qualifier	WSW02	Qualifier	WHC01	Qualifier	MCL	Footnote
Arsenic	1.7	J	4.7	J	4.7	J	102	J	50	*
Barium	12.7		10.7		10.9		272		2,000	F
Beryllium	1.0	U	1.0	U	1.0	U	2.2	J	4	#
Cadmium	2.0	U	2.0	U	2.0	U	3	J	5	F
Chromium	5.1	U	5.0	U	5.0	U	29.2		100	F
Cobalt	3.1	U	3.0	U	3.0	U	49.1			NS
Copper	5.5	J	4	J	3.0	U	171		1,300	AL
Lead	1.2	J	1.2	J	1.4	J	54.4		15	AL
Manganese	1.7	J	1.0	U	1.0	U	4,020			NS
Nickel	1.0	U	1.0	U	10	U	69	J	100	F
Silver	3.1	U	3.0	U	3.0	U	13.6			NS
Vanadium	2.0	U	2.0	U	2.0	U	66.7			LR
Zinc	7.2	UJ	82.9		85.7		717			LR
Aluminum	61	UJ	65	UJ	67	UJ	27,600			LR
Iron	12	J	13	J	13	J	74,200			NS

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Table 5-2 (Continued)
Water Sample Results, Avery, Idaho
August 26, 1992

Substance Detected (µg/L)	Avery Sewer and Water Well - Off-Site Background		Avery Elementary School Well - Off Site		Avery Elementary School Well - Off Site (duplicate)		On-Site Monitoring Well (HC-3)		Safe Drinking Water Act Standard	
	WAW01	Qualifier	WSW01	Qualifier	WSW02	Qualifier	WHC01	Qualifier	MCL	Footnote
Pesticides/PCB										
None detected										

Qualifiers:

J - The value is an estimate

U - Analyte or compound was not detected at or above the shown value

UJ - Analyte or compound was not detected at or above the shown value; the shown value is an estimate of the sample quantitation limit for this analyte or compound

Notes:

MCL - Maximum contaminant level

Highlighted data represent significantly elevated concentration (Table 5-1 criteria)

Footnotes:

* - Under review

- Beryllium MCL effective January 1994

AL - Action level

F - Final

LR - Listed for regulation

NS - No standard under this regulation

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monitoring well on the ARDR site (WCH01) is not constructed as a drinking water well, is developed in the shallow aquifer, and usually remains stagnant. A more appropriate comparison for the on-site monitoring well would be another monitoring well in the shallow aquifer located upgradient of the ARDR site. No other monitoring wells were available in the Avery area.

Additionally, the Safe Drinking Water Act maximum contaminant limit (MCL), provided in the last column of Table 5-2, is not applicable to the monitoring well sample (WHC01). MCLs are for comparison to drinking water wells only.

5.1.1 Volatile Organics

As indicated in Table 5-2, no volatile organic compounds (VOCs) were detected in the background well sample (WAW01). The VOC water sample results for WAW01 were not estimated.

No VOCs were reported in the Avery school well samples WSW01 and WSW02. Two VOCs were detected in the sample collected from the on-site monitoring well (WHC01). These data were reported at concentrations determined to be significant. These VOCs were benzene at 20 $\mu\text{g/L}$ and naphthalene at 87 $\mu\text{g/L}$. These results were not estimated.

5.1.2 Semivolatile Organics

No semivolatile organic compounds were detected in the background well sample (WAW01). None of these values were estimated.

No semivolatile organic compounds were reported in the Avery school well samples (WSW01 and WSW02). Seven semivolatile organic compounds were reported in the on-site monitoring well sample (WHC01). Five of these compounds qualify as significant concentrations: acenaphthene at 54 $\mu\text{g/L}$, phenanthrene at 230 $\mu\text{g/L}$, fluorene at 150 $\mu\text{g/L}$, 1-methyl naphthalene at 840 $\mu\text{g/L}$, and 2-methyl naphthalene at 630 $\mu\text{g/L}$. These are polycyclic aromatic hydrocarbons (PAHs), which are derivatives of coal, oil, and gasoline. Two other semivolatile compounds were reported at qualified concentrations in sample WHC01 but not at significant concentrations. The basis for the qualification of the two nonsignificant semivolatile compounds is unknown.

5.1.3 Total Metals

Background levels for total metals are provided by sample WAW01. Reported concentrations of arsenic, copper, lead, manganese, and iron in sample WAW01 are estimated (unknown bias).

No analytes were reported at significant concentrations in the Avery school well samples (WSW01 and WSW02). Nineteen analytes were detected in on-site sample WHC01. Four of those 19 analytes, arsenic, cadmium, chromium, and nickel, were reported at estimated (unknown bias) concentrations. Of those 19 analytes, 10 are at significant concentrations: arsenic at 102 $\mu\text{g/L}$, barium at 272 $\mu\text{g/L}$, chromium at 29.2 $\mu\text{g/L}$, cobalt at 49.1 $\mu\text{g/L}$, copper at 171 $\mu\text{g/L}$, lead at 54.4 $\mu\text{g/L}$, manganese at 4,020 $\mu\text{g/L}$, nickel at 69 $\mu\text{g/L}$, silver at 13.6 $\mu\text{g/L}$, and vanadium at 66.7 $\mu\text{g/L}$.

5.1.4 Pesticides/PCBs

No pesticide or PCB compounds were reported at detected concentrations in collected water samples.

5.2 SEDIMENT

Sediment sample results are provided in Table 5-3.

The upstream river sediment sample (SS001) is designated as background and was collected approximately 0.7 mile east of the ARDR site. This background sample was compared to other sediment samples, including the oily seep sediment samples (ORS01 and ORS02), to define significant concentrations.

5.2.1 Volatile Organics

No VOCs were reported in the background river sediment sample (SS001). The reported results for acetone and p-isopropyltoluene were estimated (unknown bias).

All reported concentrations of VOCs in sediment samples (other than background) were estimated (unknown bias). Seven VOCs were detected in the sediment samples collected at the ARDR site. None of these seven VOCs were reported at concentrations that are significant.

Table 5-3
Sediment Sample Results, Avery, Idaho
August 25, 1992

Substance Detected	Upstream River Sediment - Background		Along Site River Sediment		Downstream River Sediment		Along Site River Sediment Duplicate		Oily Seep Sediment		Oily Seep Sediment Duplicate	
	SS001	Qualifier	SS002	Qualifier	SS003	Qualifier	SS004	Qualifier	ORS01	Qualifier	ORS02	Qualifier
Volatile Organics (µg/kg)												
Acetone	10	UJ	38	U	11	UJ	110	J	330	U	600	U
Methylene chloride	12	U	11	U	11	U	12	U	110	U	17	J
2-Butanone	3	U	7	U	11	U	8	J	560	U	600	U
p-Isopropyltoluene	2	UJ	7	J	2	U	2	UJ	110	U	120	U
Toluene	2	U	0.2	J	2	U	2	U	110	U	120	U
Chlorobenzene	2	U	2	U	2	U	0.6	J	110	U	120	U
Total xylenes	2	U	2	UJ	2	U	2	UJ	7	J	4	J
Semivolatile Organics (µg/kg)												
Benzo(a)pyrene	13	J	630	U	130	U	1,000	U	1,700	J	700	J
Benzo(a)anthracene	31	J	630	U	17	J	80	J	3,400	J	5,500	J
Isophorone	27	J	110	J	7	J	1,000	U	5,400	U	5,300	U
Acenaphthene	140	U	630	U	130	U	1,000	U	13,000	J	4,000	J
Di-n-butylphthalate	230	U	630	U	130	U	1,000	U	590	J	5,300	UJ
Phenanthrene	49	J	180	J	9	J	310	J	14,000	J	5,300	UJ
Butylbenzylphthalate	140	U	1,600	U	130	U	2,600	U	14,000	UJ	520	J
N-Nitrosodiphenylamine	24	J	86	J	1,600	UJ	2,900	J	71,000	UJ	70,000	UJ
Fluorene	140	U	630	U	130	U	1,000	U	22,000	J	5,300	U
Carbazole	68	J	29	J	640	UJ	5,200	UJ	28,000	UJ	28,000	UJ
Naphthalene, 1-Methyl-	4	J	84	J	130	U	1,000	U	10,000	J	8,400	
2-Methylnaphthalene	6	J	63	J	130	U	89	J	2,700	J	2,700	J

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Table 5-3 (Continued)
Sediment Sample Results, Avery, Idaho
August 25, 1992

Substance Detected	Upstream River Sediment - Background		Along Site River Sediment		Downstream River Sediment		Along Site River Sediment Duplicate		Oily Seep Sediment		Oily Seep Sediment Duplicate	
	SS001	Qualifier	SS002	Qualifier	SS003	Qualifier	SS004	Qualifier	ORS01	Qualifier	ORS02	Qualifier
Benzyl alcohol	710	U	1,500	J	640	U	5,200	UJ	28,000	UJ	28,000	UJ
bis(2-Ethylhexyl) phthalate	8,600	J	950	U	980	U	20,000		1,300	J	5,300	U
Di-n-octyl phthalate	140	U	630	U	130	U	1,000	U	5,400	U	420	J
Anthracene	140	U	180	J	130	U	1,000	U	5,400	U	5,300	UJ
Pyrene	64	J	280	J	8	J	630	J	15,000	J	10,000	J
Benzo(g,h,i)perylene	140	U	630	U	130	U	1,000	U	5,400	UJ	1,200	J
Benzo(b)fluoranthene	16	J	630	U	130	U	1,000	U	4,100	J	2,200	J
Fluoranthene	23	J	630	U	6	J	190	J	6,000	J	5,300	UJ
Chrysene	85	J	630	U	12	J	610	J	6,200		4,900	J
Retene	140	U	240	J	130	U	1,000	U	13,000	J	5,300	U
Total Metals (mg/kg)												
Selenium	0.20	U	0.20	U	0.20	U	0.20	U	0.2	U	0.21	J
Mercury	0.02	UJ	0.02	UJ	0.02	UJ	0.023	J	0.2	UJ	0.046	J
Calcium	1,160		1,340		1,470		1,800		1,200	J	1,300	
Magnesium	45.3		4,150		3,590		4,010		2,870		3,130	
Potassium	812		916		849		792		649		816	
Arsenic	23		17.2		11	J	24.1		11	J	11	J
Barium	27.6		33.8	J	31.3		36.7		31.1		30.7	
Beryllium	0.29	J	0.34	J	0.26	J	0.35	J	0.36	J	0.38	J
Cadmium	0.28	J	0.20	U	0.20	U	0.38	J	0.20	U	0.56	J
Chromium	7.22		7.46		6.39		8.62		6.24		6.18	

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Table 5-3 (Continued)
Sediment Sample Results, Avery, Idaho
August 25, 1992

Substance Detected	Upstream River Sediment - Background		Along Site River Sediment		Downstream River Sediment		Along Site River Sediment Duplicate		Oily Seep Sediment		Oily Seep Sediment Duplicate	
	SS001	Qualifier	SS002	Qualifier	SS003	Qualifier	SS004	Qualifier	ORS01	Qualifier	ORS02	Qualifier
Cobalt	9.6		5.95		6.08		6.03		4.3		4.11	
Copper	27.5	J	42		17		107		121		82	J
Lead	25.4		36.5		9.2	J	165		37.3		20.6	
Manganese	203		167		264		164		112		94.2	
Nickel	12.7		12		8.45		15.2		14.4		15.3	
Silver	3.33	J	3.02	J	2.5	J	3.36	J	1.78		2.13	
Vanadium	14.8		18.4	J	11.5		25.5		23.6		23	
Zinc	47.9		52.1	J	40.2		63.9		47.3	J	87.2	
Aluminum	7,380		6,440		5,840		6,340		4,680		5,520	
Iron	18,800		16,300		13,200		17,900		10,300		12,000	
Pesticides/PCB (µg/kg)												
Aroclor-1260	57	U	320		52	U	260		760		890	

Qualifiers:

U - Analyte or compound was not detected at or about the shown value

UJ - Analyte or compound was not detected at or above the shown value; the shown value is an estimate of the sample quantitation limit for this analyte or compound

J - The value is an estimate

Note:

Highlighted data represent significantly elevated concentrations (Table 5-1)

PAL 002070

5.2.2 Semivolatile Organics

Thirteen semivolatile organic compounds were reported in the upstream river sediment sample (SS001). The bias of the estimated sample results is unknown.

Twenty-two semivolatile organic compounds were reported in sediment samples collected at the ARDR site. Of these 22 compounds, 17 were reported at significant concentrations. Thirteen of these 17 significant compounds detected in site river sediments are classified as PAHs.

No significant concentrations of semivolatile organic compounds were reported in the downstream sediment sample (SS003). Only one compound, benzyl alcohol, was reported at a significant concentration in the site river sediment sample (1,500 $\mu\text{g/kg}$ in sample SS002). Only n-nitrosodiphenylamine was reported in the site river sediment duplicate sample at a significant concentration (2,900 $\mu\text{g/kg}$ in sample SS003). These data were estimated (unknown bias).

The remaining 15 semivolatile organic compounds detected at significant concentrations were reported in samples collected of the site oily seep sediment. Thirteen of the compounds reported in the oily seep sediment sample were PAHs. The PAH compounds reported in sample ORS01 (reported as nonsignificant or nondetects in sample ORS02) at significant concentrations included phenanthrene at 14,000 $\mu\text{g/kg}$, fluorene at 22,000 $\mu\text{g/kg}$, fluoranthene at 6,000 $\mu\text{g/kg}$, and retene at 13,000 $\mu\text{g/kg}$. Semivolatile compounds reported in duplicate sample ORS02 (reported as nonsignificant or nondetects in sample ORS01) were butylbenzylphthalate at 520 $\mu\text{g/kg}$, di-n-octyl phthalate at 420 $\mu\text{g/kg}$, and benzo(g,h,i)perylene (PAH) at 1,200 $\mu\text{g/kg}$. The following PAH compounds were reported in both samples ORS01 and ORS02 at significant concentrations, respectively: benzo(a)pyrene at 1,700 $\mu\text{g/kg}$ and 700 $\mu\text{g/kg}$, benzo(a)anthracene at 3,400 $\mu\text{g/kg}$ and 5,500 $\mu\text{g/kg}$, acenaphthene at 13,000 $\mu\text{g/kg}$ and 4,000 $\mu\text{g/kg}$, 1-methyl naphthalene at 10,000 $\mu\text{g/kg}$ and 8,400 $\mu\text{g/kg}$, 2-methyl naphthalene at 2,700 $\mu\text{g/kg}$ in both samples, pyrene at 15,000 $\mu\text{g/kg}$ and 10,000 $\mu\text{g/kg}$, benzo(b)fluoranthene at 4,100 $\mu\text{g/kg}$ and 2,200 $\mu\text{g/kg}$, and chrysene at 6,200 $\mu\text{g/kg}$ and 4,900 $\mu\text{g/kg}$. All of these sample results were estimated (unknown bias). Calibration discrepancies, indicating low bias, were the basis for qualification of data for butylbenzylphthalate, bis(2-ethylhexyl)phthalate, di-n-octyl phthalate, and benzo(g,h,i)perylene.

5.2.3 Total Metals

Background levels for total metals are provided by sample WAW01. Reported concentrations of arsenic, copper, lead, manganese, and iron in sample WAW01 are estimated (unknown bias).

No analytes were reported at significant concentrations in the Avery school well samples (WSW01 and WSW02). Nineteen analytes were detected in on-site sample WHC01. Four of those 19 analytes, arsenic, cadmium, chromium, and nickel, were reported at estimated (unknown bias) concentrations. Of those 19 analytes, 10 are at significant concentrations: arsenic at 102 $\mu\text{g/L}$, barium at 272 $\mu\text{g/L}$, chromium at 29.2 $\mu\text{g/L}$, cobalt at 49.1 $\mu\text{g/L}$, copper at 171 $\mu\text{g/L}$, lead at 54.4 $\mu\text{g/L}$, manganese at 4,020 $\mu\text{g/L}$, nickel at 69 $\mu\text{g/L}$, silver at 13.6 $\mu\text{g/L}$, and vanadium at 66.7 $\mu\text{g/L}$.

5.2.4 Pesticide/PCBs

No pesticide compounds were detected in any sediment samples collected at the ARDR site.

The PCB compound Aroclor-1260 was reported as not detected in the upstream (background SS001) and downstream (SS003) sediment samples. The reported nondetect values in these samples were not estimated.

Aroclor-1260 was reported in the site river sediment samples (SS002 and SS004) at concentrations of 320 $\mu\text{g/kg}$ and 260 $\mu\text{g/kg}$. Aroclor-1260 was also reported in the oily seep sediment samples (ORS01 and ORS02) at concentrations of 760 $\mu\text{g/kg}$ and 890 $\mu\text{g/kg}$. None of these values were estimated.

5.3 SURFACE SOIL

Surface soil sample (from 0 to 6 inches below the ground surface) results are provided in Table 5-4.

Surface soil sample SS02-1 was designated as background for comparison purposes. This sample was collected of the site fill material and was used to evaluate significant concentrations of site surface soil samples. A site soil sample was used as background to characterize the fill material at the ARDR site, which may not be native to the area.

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Table 5-4
Surface Soil Sample Results, Avery, Idaho
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Substance Detected	Background		East Site Soil		Area Near Creosote Logs - Black Soil		Along Site Graded Road Surface		Along Side of Former RR Buildings		Along Top of River Embankment		Along Side of Former RR Buildings - Duplicate	
	SS02-1	Qualifier	SS01-1	Qualifier	SS03-1	Qualifier	SS04-1	Qualifier	SS05-1	Qualifier	SS06-1	Qualifier	SS07-1	Qualifier
Volatile Organics (µg/kg)														
1,1,1-Trichloroethane	3	UJ	4	U	200	UJ	3	UJ	3	UJ	3	UJ	0.6	J
Carbon disulfide	17	U	18	U	1,000	U	16	U	15	U	15	U	0.1	J
1,1-Dichloroethene	3	U	4	U	200	U	3	U	3	U	3	U	0.4	J
Trichlorofluoromethane	0.5	J	4	U	200	UJ	3	UJ	0.4	J	3	UJ	3	UJ
Methane, Dichlorodifluoro-	23	J	8	J	1,000	U	16	UJ	16	J	0.4	J	76	J
Ethene, Trichloro-	3	U	4	U	200	U	3	U	3	U	3	U	0.1	J
Naphthalene	4		4	UJ	1,200		3	U	3	U	3	UJ	3	U
1,2,4-Trimethylbenzene	1	J	4	UJ	1,300		3	U	3	U	3	UJ	3	U
Ethylbenzene	3	U	4	U	13	J	3	U	3	U	3	U	3	U
1,3,5-Trimethylbenzene	0.7	J	4	UJ	1,400	J	3	UJ	3	U	3	UJ	3	UJ
Toluene	3	U	4	U	15	J	3	U	3	U	3	U	3	U
trans-1,2-Dichloroethene	3	U	4	U	200	U	3	U	3	U	3	U	0.5	J
Benzene, 1-Bromo-4-fluoro-	NAF		NAF		NAF		NAF		87		NAF		NAF	
Total xylenes	0.09	J	4	UJ	400		3	U	NAF		3	UJ	NAF	
Semivolatile Organics (µg/kg)														
Benzo(a)pyrene	480	U	110	J	440	J	680	U	100	U	120	UJ	120	U
Benzo(a)anthracene	100	J	140	J	3,000		680	U	100	U	120	U	120	U
Isophorone	480	U	490	U	830	U	13	J	340	J	83	J	5	J
Acenaphthene	26	J	34	J	2,700	J	680	U	100	U	120	U	120	U

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Surface Soil Sample Results, Avery, Idaho
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Substance Detected	Background		East Site Soil		Area Near Creosote Logs - Black Soil		Along Site Graded Road Surface		Along Side of Former RR Buildings		Along Top of River Embankment		Along Side of Former RR Buildings - Duplicate	
	SS02-1	Qualifier	SS01-1	Qualifier	SS03-1	Qualifier	SS04-1	Qualifier	SS05-1	Qualifier	SS06-1	Qualifier	SS07-1	Qualifier
Phenanthrene	160	J	510		14,000		220	J	120		18	J	65	J
Butylbenzylphthalate	41	J	1,300	U	210	U	1,700	U	260	U	310	U	310	U
N-Nitrosodiphenylamine	6,200	UJ	74	J	11,000	UJ	27	J	1,400	UJ	1,600	UJ	1,500	UJ
Fluorene	480	U	31	J	3,000		680	U	100	U	120	U	120	U
Naphthalene, 1-Methyl-	66	J	140	J	26,000		150	J	40	J	14	J	17	J
Naphthalene	22	J	170	J	2,700	J	93	J	110		18	J	45	J
2-Methylnaphthalene	32	J	160	J	15,000		150	J	48	J	15	J	22	J
bis(2-Chloroethyl) ether	480	U	68	J	830	U	680	U	100	U	120	U	120	U
Anthracene	26	J	93	J	120	J	38	J	13	J	120	U	9	J
Pyrene	240	J	460	J	7,000		110	J	25	J	6	J	43	J
Dibenzofuran	480	U	160	J	830	U	62	J	50	J	11	J	21	J
Benzo(g,h,i)perylene	480	U	240	J	830	U	680	U	100	U	120	UJ	66	J
Indeno(1,2,3-cd)pyrene	480	U	160	J	190	J	680	U	100	U	120	UJ	52	J
Benzo(b)fluoranthene	110	J	430	J	1,000	J	680	U	39	J	120	UJ	79	J
Fluoranthene	110	J	430	J	5,700	J	120	J	67	J	120	U	45	J
Benzo(k)fluoranthene	480	UJ	130	J	830	U	680	UJ	100	UJ	120	UJ	120	UJ
Acenaphthylene	480	U	16	J	30	J	680	U	100	U	120	U	120	U
Chrysene	160	J	440	J	3,300		680	U	40	J	120	U	120	U
Retene	480	U	240	J	830	U	140	J	78	J	120	U	28	J

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Surface Soil Sample Results, Avery, Idaho
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Substance Detected	Background		East Site Soil		Area Near Creosote Logs - Black Soil		Along Site Graded Road Surface		Along Side of Former RR Buildings		Along Top of River Embankment		Along Side of Former RR Buildings - Duplicate	
	SS02-1	Qualifier	SS01-1	Qualifier	SS03-1	Qualifier	SS04-1	Qualifier	SS05-1	Qualifier	SS06-1	Qualifier	SS07-1	Qualifier
Total Metals (mg/kg)														
Mercury	0.02	UJ	0.065	J	0.02	UJ	0.021	J	0.02	UJ	0.02	UJ	0.02	UJ
Calcium	2,910		4,220		2,520		4,920		2,970		10,800	J	3,060	
Magnesium	12,600		2,720		2,680		4,680		5,890		11,000	J	6,180	
Potassium	2,740		948		601		1,710		2,810		4,800		2,870	
Arsenic	36.4		18.5		9.6	J	21.1		29.7		39.6		44.5	
Barium	76.3		145		68.7		91.9		98.4		83.3		98.6	
Beryllium	0.836		0.46	J	0.28	J	0.42	J	0.56		0.795		0.599	
Cadmium	0.32	J	1.58		0.71	J	1.5	J	0.35	J	0.58	J	0.29	J
Chromium	13.2		16.1		10.6		15.3		10.5		15.7		10.8	
Cobalt	8.92		5.97		4.9		8.22		10.2		9.99		10.2	
Copper	17.8		180		76.6		56		34.4		38.3		31.6	
Lead	394		235		87.5		60.6		29.2		61.6		24.8	
Manganese	653		326		163		322		491		575	J	491	
Nickel	15.1		16.6		15.1		13.8		16		16.3		15.3	
Silver	4.33		5.02	J	2.25	J	3.28		4.4	J	3.39		4.31	
Vanadium	19.8		21.5		18.8		16.2		18.2		17.8	J	18.1	
Zinc	24.6		187		100		196		50		75.4	J	50.3	
Aluminum	14,700		5,500		5,060		7,710		12,700		13,000		12,600	
Iron	22,900		20,200		12,500		17,600		24,000		18,200		23,800	

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Surface Soil Sample Results, Avery, Idaho
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Substance Detected	Background		East Site Soil		Area Near Creosote Logs - Black Soil		Along Site Graded Road Surface		Along Side of Former RR Buildings		Along Top of River Embankment		Along Side of Former RR Buildings - Duplicate	
	SS02-1	Qualifier	SS01-1	Qualifier	SS03-1	Qualifier	SS04-1	Qualifier	SS05-1	Qualifier	SS06-1	Qualifier	SS07-1	Qualifier
Pesticides/PCB ($\mu\text{g}/\text{kg}$)														
Aroclor-1260	49	U	390		350		410		43	U	50	U	48	U

Qualifiers:

J - The value is an estimate.

U - Analyte or compound was not detected at or about the shown value

UJ - Analyte or compound was not detected at or above the shown value; the shown value is an estimate of the sample quantitation limit for this analyte or compound

Notes:

NAF - Not analyzed for

Highlighted data indicate significantly elevated concentrations

5.3.1 Volatile Organics

Six VOCs were detected in the on-site background sample (SS02-1). The reported concentrations of VOCs in the background sample were estimated (unknown bias) for five compounds.

Fourteen VOCs were reported in the on-site surface soil samples; five of these VOCs were detected at significant concentrations in one on-site sample. Four of these significant levels were reported in the sample collected near the pile of creosote logs (SS03-1): naphthalene at 1,200 $\mu\text{g}/\text{kg}$, 1,2,4-trimethylbenzene at 1,300 $\mu\text{g}/\text{kg}$, 1,3,5-trimethylbenzene at 1,800 $\mu\text{g}/\text{kg}$, and total xylenes at 400 $\mu\text{g}/\text{kg}$. Only the reported concentration for 1,3,5-trimethylbenzene was estimated (unknown bias). The fifth VOC, 1-bromo-4-fluorobenzene, was reported only in sample SS05-1 (87 $\mu\text{g}/\text{kg}$). This compound was not reported in other surface soil samples, including background, collected at this site.

5.3.2 Semivolatile Organics

Twenty-three semivolatile organic compounds were reported in the surface soil samples collected at the ARDR site. Of these compounds, 12 were detected in the background sample (SS02-1). All of these concentrations were estimated (unknown bias).

Of the 23 semivolatile organic compounds reported in the on-site surface soil samples, 10 were detected at significant concentrations. All of these compounds are PAHs and were reported in the sample collected near the pile of creosote logs (SS03-1). The significant compounds detected in sample SS03-1 were benzo(a)anthracene at 3,000 $\mu\text{g}/\text{kg}$, acenaphthene at 2,700 $\mu\text{g}/\text{kg}$, phenanthrene at 14,000 $\mu\text{g}/\text{kg}$, fluorene at 3,000 $\mu\text{g}/\text{kg}$, 1-methylnaphthalene at 26,000 $\mu\text{g}/\text{kg}$, naphthalene at 2,700 $\mu\text{g}/\text{kg}$, 2-methylnaphthalene at 15,000 $\mu\text{g}/\text{kg}$, pyrene at 7,000 $\mu\text{g}/\text{kg}$, fluoranthene at 5,700 $\mu\text{g}/\text{kg}$ and chrysene at 3,300 $\mu\text{g}/\text{kg}$. Additionally, naphthalene was reported at the significant concentration of 110 $\mu\text{g}/\text{kg}$ in the sample collected near the old railroad buildings (SS05-1) and 2-methylnaphthalene was reported at the significant concentration of 160 $\mu\text{g}/\text{kg}$ in the sample collected from the east end of the site (SS01-1). Estimated (unknown bias) on-site samples included acenaphthene in sample SS03-1, naphthalene in sample SS03-1, 2-methylnaphthalene in sample SS01-1, and fluoranthene in sample SS03-1.

5.3.3 Total Metals

Nineteen inorganic analytes were reported in the on-site surface soil samples. Eighteen of these analytes were detected in the background sample (SS02-1). Two of the inorganic analytes were estimated (bias unknown), mercury at the nondetect value of 0.02 mg/kg and cadmium at the concentration of 0.32 mg/kg.

Of the 19 analytes reported in the on-site surface soil samples, only copper was detected at significant concentrations. Copper was reported at the concentrations of 56 mg/kg in the sample collected from the site road surface (SS04-1), 76.6 mg/kg in the sample collected near the pile of creosote logs (SS03-1), and 180 mg/kg in the east site soil sample (SS01-1).

5.3.4 Pesticides/PCBs

No pesticides were reported in the on-site surface soil samples collected from the ARDR site.

No PCBs were detected in the background sample (SS02-1). Aroclor-1260 was reported as a nondetect in sample SS02-1.

Aroclor-1260 was detected at significant concentrations in three on-site surface soil samples: 360 $\mu\text{g/kg}$ in SS01-1 (east site soil), 350 $\mu\text{g/kg}$ in SS03-1 (near the pile of creosote logs), and 410 $\mu\text{g/kg}$ in SS04-1 (site road surface). None of these reported values were estimated.

5.4 SUBSURFACE SOIL

Subsurface soil sample (18 to 24 inches below the ground surface) results are provided in Table 5-5.

Subsurface soil sample SS02-2 was designated as background for comparison purposes. This sample was collected from the site fill material and was used to evaluate significant concentrations of site subsurface soil samples. A site subsurface soil sample was used as background to characterize the fill material at the ARDR site, which may not be native to the area.

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Table 5-5
Subsurface Soil Sample Results, Avery, Idaho
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Substance Detected	Background		East Site Soil		Area Near Creosote Logs - Black Soil		Along Site Graded Road Surface		Along Side of Former RR Buildings		Along Top of River Embankment		Along Side of Former RR Buildings - Duplicate	
	SS02-2	Qualifier	SS01-2	Qualifier	SS03-2	Qualifier	SS04-2	Qualifier	SS05-2	Qualifier	SS06-2	Qualifier	SS07-2	Qualifier
Volatile Organics (µg/kg)														
1,1,1-Trichloroethane	3	UJ	3	UJ	350	UJ	3	UJ	3	UJ	0.6	J	1	J
Methylene chloride	3	J	16	U	1,700	U	14	U	3	U	16	U	16	U
1,1-Dichloroethene	0.1	J	3	U	350	U	3	U	3	UJ	3	U	3	U
Trichlorofluoromethane	0.7	J	3	U	350	UJ	3	UJ	0.7	J	3	UJ	3	UJ
Methane, Dichlorodifluoro-	41	UJ	14	J	1,700	UJ	3	UJ	14	J	3	UJ	16	UJ
1,2,3-Trichlorobenzene	3	U	3	UJ	350	U	3	U	3	UJ	4	J	3	UJ
Naphthalene	1	J	3	UJ	6,400		3	U	3	UJ	3	UJ	2	J
1,2,4-Trimethylbenzene	3	U	3	UJ	5,900		3	U	3	UJ	3	UJ	3	UJ
1,2-Dibromo-3-chloro-propene	16	U	16	UJ	1,700	U	14	U	14	UJ	16		16	UJ
p-Isopropyltoluene	3	U	3	UJ	1,500		3	U	3	UJ	3	UJ	3	UJ
Ethylbenzene	3	U	3	UJ	65	J	3	U	3	U	3	U	3	UJ
Benzene, propyl-	3	U	3	UJ	110	J	3	U	3	UJ	3	UJ	3	UJ
1,3,5-Trimethylbenzene	3	UJ	3	UJ	5,000	J	3	U	3	U	3	UJ	3	UJ
Toluene	3	U	0.5	J	49	J	3	U	3	U	3	U	3	UJ
1,2,4-Trichlorobenzene	3	U	3	UJ	350	U	3	U	3	UJ	8	J	3	UJ
Total xylenes	3	U	3	UJ	1,620		3	U	NAF		3	UJ	3	UJ

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Subsurface Soil Sample Results, Avery, Idaho
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Substance Detected	Background		East Site Soil		Area Near Creosote Logs - Black Soil		Along Site Graded Road Surface		Along Side of Former RR Buildings		Along Top of River Embankment		Along Side of Former RR Buildings - Duplicate	
	SS02-2	Qualifier	SS01-2	Qualifier	SS03-2	Qualifier	SS04-2	Qualifier	SS05-2	Qualifier	SS06-2	Qualifier	SS07-2	Qualifier
Semivolatile Organics (µg/kg)														
Benzo(a)pyrene	120	U	240	J	740	J	16	J	650		1,600		91	J
Dibenzo(a,h)anthracene	310	U	2,300	U	2,000	U	670	UJ	170	J	210	J	1,000	U
Benzo(a)anthracene	120	U	310	J	2,200		28	J	770		1,500		270	J
Isophorone	8	J	900	U	790	U	47	J	50	J	3,000		820	J
Acenaphthene	120	U	72	J	8,700	J	260	UJ	440	U	400	U	91	J
Phenanthrene	9	J	1,200		31,000		27	J	6,800		680		4,300	U
N-Nitrosodiphenylamine	17	J	12,000	UJ	10,000	UJ	3,500	UJ	92	J	5,200	UJ	84	J
Fluorene	120	U	58	J	11,000		2	J	68	J	400	U	31	J
Carbazole	630	UJ	4,600	UJ	4,100	UJ	1,400	UJ	350	J	2,100	UJ	130	J
Naphthalene, 1-Methyl-	120	U	370	J	55,000		14	J	1,900		190		1,800	
Naphthalene	120	U	300	J	6,000		11	J	5,700		190		4,400	
2-Methylnaphthalene	120	U	360	J	46,000		16	J	2,500		250		2,200	
bis(2-Ethylhexyl) phthalate	120	U	900	U	6,100	J	1,300	U	440	U	400	U	2,300	U
Anthracene	120	U	194	J	2,600	J	3	J	460	J	63	J	220	J
1,2,4-Trichlorobenzene	120	U	900	U	790	U	260	UJ	440	U	2,900		400	U
Pyrene	9	J	1,300		5,900		39	J	3,400		3,200		850	
Dibenzofuran	120	U	390	J	790	U	5	J	3,400	U	51	J	2,500	
Benzo(g,h,i)perylene	120	U	470	J	790	U	260	UJ	910		1,300		400	U
Indeno(1,2,3-cd)pyrene	120	U	260	J	790	U	16	J	930		1,100		170	J

Avery Railroad Dump and Roundhouse
 SI Report
 Contract No. 68-W9-0054
 Work Assignment No. 54-17-0JZZ
 ARCS EPA Region 10

Section 5.0
 Revision No. 0
 Date: 1/19/93
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Table 5-5 (Continued)
Subsurface Soil Sample Results, Avery, Idaho
August 26, 1992

Substance Detected	Background		East Site Soil		Area Near Creosote Logs - Black Soil		Along Site Graded Road Surface		Along Side of Former RR Buildings		Along Top of River Embankment		Along Side of Former RR Buildings - Duplicate	
	SS02-2	Qualifier	SS01-2	Qualifier	SS03-2	Qualifier	SS04-2	Qualifier	SS05-2	Qualifier	SS06-2	Qualifier	SS07-2	Qualifier
Benzo(b)fluoranthene	120	U	610	J	470	J	43	J	2,300		1,800	J	760	
Fluoranthene	9	J	1,100	J	1,700		50	J	3,400		2,300		1,700	
Benzo(k)fluoranthene	120	U	900	U	790	UJ	20	J	580		670	J	210	J
Acenaphthylene	120	U	900	U	790	U	260	UJ	440	U	37	J	24	J
Chrysene	120	U	620	J	2,500		32	J	1,800		1,700	J	670	
Retene	120	U	870	J	790	U	37	J	1,600		450	J	1,100	
Total Metals (mg/kg)														
Selenium	0.20	UJ	0.20	U	0.20	U	0.20	UJ	0.20	U	0.45	J	0.46	J
Mercury	0.20	UJ	0.12	J	0.02	UJ	0.04	J	0.037	J	0.58	J	0.057	J
Calcium	2,070		3,250		1,460		4,420		5,400		4,510	J	8,050	J
Magnesium	5,260		2,580		2,070		6,410		3,590		3,580		3,360	
Potassium	1,370		437		240		2,490		1,150		687		933	
Arsenic	68.8		10	J	5.3	J	40.7		46.5		19.9		39.9	
Barium	42.8		148		21		137		247		298		597	
Beryllium	0.502		0.43	J	0.37	J	0.572		0.859		1.04		1.45	
Cadmium	0.33	J	0.39	J	0.33	J	0.49	J	0.58	J	0.81	J	0.51	J
Chromium	10.5		11.8		8.77		10.3		7.94		10.1		9.94	
Cobalt	9.63		4.74		4.79		9.21		8.17		9.85		8.58	
Copper	15.1		225		43.6		34.8		123		383		184	
Lead	25.8		211		31		47.8		225		533	J	292	

Avery Railroad Dump and Roundhouse
 SI Report
 Contract No. 68-W9-0054
 Work Assignment No. 54-17-0JZZ
 ARCS EPA Region 10

Section 5.0
 Revision No. 0
 Date: 1/19/93
 Page 5-22

Table 5-5 (Continued)
Subsurface Soil Sample Results, Avery, Idaho
August 26, 1992

Substance Detected	Background	East Site Soil		Area Near Creosote Logs - Black Soil		Along Site Graded Road Surface		Along Side of Former RR Buildings		Along Top of River Embankment		Along Side of Former RR Buildings - Duplicate	
	SS02-2 Qualifier	SS01-2	Qualifier	SS03-2	Qualifier	SS04-2	Qualifier	SS05-2	Qualifier	SS06-2	Qualifier	SS07-2	Qualifier
Manganese	323	264		96		502		401		317		371	
Nickel	12.2	15.9		16.9		13.7		23.3		71.8	J	33.9	
Silver	3.67	3.53	J	1.35	J	3.6		3.17	J	3.03	J	3.62	J
Vanadium	13.3	20.4		46.2		15.3		33.6		75.2		49.1	
Zinc	15.9	65.8		41.9		97.8		78.4		403	J	63.7	J
Aluminum	8,420	4,180		3,880		12,500		7,390		6,940		10,200	
Iron	20,300	18,700		8,210		19,600		17,800		17,400		20,400	
Pesticides/PCB (µg/kg)													
Aroclor-1260	50	U		230		170		150		370		86,700	130

Qualifiers:

J - The value is an estimate.

U - Analyte or compound was not detected at or about the shown value

UJ - Analyte or compound was not detected at or above the shown value; the shown value is an estimate of the sample quantitation limit for this analyte or compound

Notes:

NAF - Not analyzed for

Highlighted data indicate significantly elevated concentration

PAL 002082

5.4.1 Volatile Organics

Sixteen VOCs were reported in the subsurface soil samples collected at this site. Four of these VOCs were detected in the background subsurface soil sample (SS02-2): methylene chloride, 1,1-dichloroethene, trichlorofluoromethane, and naphthalene. These values and some of the nondetects were estimated, bias unknown.

Of the 16 VOCs reported in the subsurface soil samples, 9 were detected at significant concentrations. Eight of these VOCs were reported in the sample collected near the pile of creosote logs (SS03-2): naphthalene at 6,400 $\mu\text{g/kg}$, 1,2,4-trimethylbenzene at 5,900 $\mu\text{g/kg}$, p-isopropyltoluene at 1,500 $\mu\text{g/kg}$, ethylbenzene at 65 $\mu\text{g/kg}$ (estimated with an unknown bias), propylbenzene at 110 $\mu\text{g/kg}$ (estimated with an unknown bias), 1,3,5-trimethylbenzene at 5,000 $\mu\text{g/kg}$ (estimated with an unknown bias), toluene at 49 $\mu\text{g/kg}$ (estimated with an unknown bias), and total xylenes at 1,620 $\mu\text{g/kg}$. The subsurface soil sample collected along the top of the river embankment (SS06-2) reported a significant concentration of 1,2-dibromo-3-chloropropene at 16 $\mu\text{g/kg}$.

5.4.2 Semivolatile Organics

Twenty-five semivolatile organic compounds were reported in the on-site subsurface soil samples. Five compounds were detected in the background sample (SS02-2) at estimated concentrations (bias unknown): isophorone, phenanthrene, n-nitrosodiphenylamine, pyrene, and fluoranthene. Only carbazole was reported as an estimated nondetect in sample SS02-2 (bias unknown). The remaining 19 semivolatile organic compounds were reported as nondetects in sample SS02-2.

Twenty-one semivolatile organic compounds were reported at significant concentrations in the subsurface soil samples collected at this site. The bias associated with estimated semivolatile data in Table 5-5 was unknown. No significant concentrations of semivolatile organics were detected in the site road surface sample (SS04-2). Only three compounds were reported at significant concentrations in the sample of the east site soil (SS01-2). Most of the significant concentrations were reported in the samples collected near the pile of creosote logs (12 compounds from sample SS03-2), along the side of the old railroad buildings (13 compounds from sample SS05-2 and 10 compounds from the duplicate sample SS07-2), and from the top of the river embankment (14 compounds from sample SS06-2).

The compounds detected in on-site soil samples included 17 PAHs: benzo(a)pyrene at 1,600 µg/kg (SS06-2), benzo(a)anthracene ranging from 770 µg/kg (SS05-2) to 2,200 µg/kg (SS03-2), acenaphthene at 8,700 µg/kg (SS03-2), phenanthrene ranging from 680 µg/kg (SS06-2) to 31,000 µg/kg (SS03-2), fluorene at 11,000 µg/kg (SS03-2), naphthalene ranging from 190 µg/kg (SS06-2) to 6,000 µg/kg (SS03-2), 1-methylnaphthalene ranging from 190 µg/kg (SS06-2) to 55,000 µg/kg (SS03-2), 2-methylnaphthalene ranging from 250 µg/kg (SS06-2) to 46,000 µg/kg (SS03-2), anthracene at 2,600 µg/kg (SS03-2), pyrene ranging from 850 µg/kg (SS07-2) to 5,900 µg/kg (SS03-2), benzo(g,h,i)perylene at 910 µg/kg (SS05-2) and 1,300 µg/kg (SS06-2), indeno(1,2,3-cd)perylene at 930 µg/kg (SS05-2) and 1,100 µg/kg (SS06-2), benzo(b)fluoranthene ranging from 760 µg/kg (SS07-2) to 2,300 µg/kg (SS05-2), fluoranthene ranging from 1,100 µg/kg (SS01-2) to 3,400 µg/kg (SS05-2), benzo(k)fluoranthene at 580 µg/kg (SS05-2), chrysene ranging from 670 µg/kg (SS07-2) to 2,500 µg/kg (SS03-2), and retene at 1,100 µg/kg (SS07-2) and 1,600 µg/kg (SS05-2).

The remaining significant concentrations of semivolatile organic compounds were isophorone at 820 µg/kg (SS07-2) and 3,000 µg/kg (SS06-2), bis(2-ethylhexyl)phthalate at 6,100 µg/kg (SS03-2), 1,2,4-trimethylbenzene at 2,900 µg/kg (SS06-2), and dibenzofuran at 2,500 µg/kg (SS07-2).

5.4.3 Total Metals

Twenty inorganic analytes were detected in the ARDR site subsurface soils. Eighteen of these analytes were reported in the background sample (SS02-2). Selenium and mercury were reported as estimated (unknown bias) nondetect in background sample SS02-2. The reported value for cadmium was also estimated (unknown bias) in the background sample (SS02-2).

Of the 20 analytes detected in the subsurface soil samples collected at the ARDR site, only barium, copper, lead, and vanadium were reported at significant concentrations. Barium was reported in site subsurface soil samples at significant concentrations ranging from 137 mg/kg (SS04-2) to 597 mg/kg (SS07-2). Copper was present at significant concentrations ranging from 123 mg/kg (SS05-2) to 383 mg/kg (SS06-2). The reported concentrations for lead in the site samples ranged from 211 mg/kg (SS01-2) to 533 mg/kg (SS06-2). The value reported in the east site soil sample (SS01-2) was estimated (unknown bias). Vanadium was detected at significant concentrations ranging from 46.2 mg/kg (SS03-2) to 75.2 mg/kg (SS06-2).

5.4.4 Pesticides/PCBs

No pesticide compounds were detected in any subsurface soil samples collected at the ARDR site.

PCB compounds were reported as not detected in the background subsurface soil sample (SS02-2). Aroclor-1260 was detected at significant concentrations in all other on-site subsurface soil samples. Aroclor-1260 concentrations ranged from 130 $\mu\text{g}/\text{kg}$ (SS07-2) to 86,700 $\mu\text{g}/\text{kg}$ (SS06-2). None of these values were estimated.

5.5 QUALITY CONTROL SAMPLES

Quality control samples collected during the sampling at the ARDR site included a trip blank and duplicates of groundwater, river sediment, oily seep sediment, site surface soil, and site subsurface soil. The trip blank (WBW01) results reported only dichlorodifluoromethane at the estimated (unknown bias) concentration of 0.7 $\mu\text{g}/\text{L}$. All other VOCs were reported as not detected in the blank sample (WBW01).

The duplicate groundwater samples (WSW01 and WSW02) reported similar concentrations of the same compounds and analytes (Table 5-2)

Duplicate river sediment samples (SS002 and SS004) indicate greater variability between the sediment collected (Table 5-3). The results for these samples are not similar. None of the VOCs reported in sample SS002 were reported in sample SS004. Many semivolatile compounds were reported in only one sample, and the compounds reported in both samples were at dissimilar concentrations. Some of the total metals analytes were reported at similar concentrations in the river sediment sample. Aroclor-1260 was only detected in sample SS002. Due to field sampling difficulties, samples SS002 and SS004 were not collected as composites.

Oily seep sediment samples (ORS01 and ORS02) reported higher concentrations of contaminants in sample ORS01 than those reported for sample ORS02. Ten contaminants (mostly semivolatile organic compounds) were reported only in one sample or the other. The remaining detected contaminants were reported in both samples.

The duplicate soil samples (surface and subsurface) were collected near the former railroad buildings located in the middle of the site. The results of these samples indicate

low levels of contamination with a slight variation in contaminants reported at significant concentrations. The duplicate subsurface soil sample data report similar contaminants at comparable concentrations. The reason for the variability between duplicate samples is not known.

5.6 SUMMARY

The objectives of this SI were to assess the potential for releases of hazardous constituents into the environment and the potential threat to public health or the environment posed by the site. The primary environmental threat documented at this site is the release of an oily material into the St. Joe River. The secondary threat to humans and the environment is the presence of contamination in the soils at this site.

The contaminants of concern at the ARDR site are solvents (VOCs), petroleum hydrocarbons (semivolatiles), metals, and PCBs (Section 2.2). Table 5-6 indicates the areas where significant levels of these contaminants of concern were detected. The sampling results are separated into groundwater, sediment, and site soil categories. The table identifies where the data report significant concentrations in the specific area, either on- or off-site.

No significant compounds were reported in the residential groundwater samples collected from local wells. These data indicate that contaminants from the ARDR are not present in the area groundwater. These data are not conclusive; no sample was collected of the on-site residential well nor of the wells located west (the assumed direction of groundwater flow) of the site.

The on-site well sample indicates that VOCs, semivolatile (PAH) compounds, and inorganic analytes are present in the groundwater below the site. These data support the information concerning reported release of solvents and fuel oils to the site by railroad operations.

Results from the upstream and downstream sediment samples did not indicate significant concentrations of contaminants of concern at this site. This information appears to indicate that the observed release of contaminants from the site (oily seep) into the St. Joe River are diluted or are not deposited. Contaminants of concern were reported at significant concentrations in the oily seep sediment samples and site river sediment

Table 5-6
Presence of Contaminants of Concern at ARDR

Location of Sampling	Volatile Organic Compounds (solvents)	Semivolatiles (solvents, petroleum hydrocarbons)	Total Metals	PCB
Off-site wells	No	No	No	No
On-site well	Yes	Yes	Yes	No
Site river sediments	No	Yes	Yes	Yes
Oily seep sediments	Yes	Yes	No	Yes
Downstream river sediments	No	No	No	No
On-site surface soils	Yes	Yes	Yes	Yes
On-site subsurface soils	Yes	Yes	Yes	Yes

samples (less than 100 feet downstream of the oily seep). These data confirm the observed release of visible oily seep contaminants to the St. Joe River.

Site soils contained significant concentrations of contaminants of concern. The presence of significant concentrations of PAH compounds at the ARDR site support the information concerning historical railroad activities. These compounds are associated with coal, oil, and gasoline. The fueling and maintenance activities conducted at this site would indicate the presence of these PAH compounds in site soils.

In general, the site data indicate the presence of significant levels of contamination in the groundwater below the site, the oily material seeping from the site, and on-site soils.

6.0 REFERENCES

- Allen, Pat. 1992. Assistant Public Works Director for Shoshone County, Idaho. Personal communication with Michelle Wittenbrink, URS Consultants, Inc., April 20, 1992.
- Davis, Bill. 1993. File Manager for the Potlatch Corporation. Personal communication with Kara Steward, URS Consultants, Inc., January 5, 1993.
- Fish, Mike. 1992. Construction Services Manager for the Potlatch Corporation. Personal communication with Kara Steward, URS Consultants, Inc., May 5, 1992, and August 26, 1992.
- . 1991. Avery Landing Site—Proposed Remediation. Letter to Brian Painter and Lisa Prochnow of IDEQ, dated March 27, 1991.
- Hart-Crowser, Inc. 1989a. Avery Idaho Site Preliminary Environmental Service. Letter to Mike Fish of Potlatch, dated August 23, 1989.
- . 1989b. Site Exploration Report, Avery Landing Site, Avery, Idaho. Letter to Mike Fish of Potlatch, dated October 27, 1989.
- Idaho Department of Water Resources (IDWR). 1979. Well Driller's Report - Potlatch Corp. Northern Logging Unit. Well drilled on 12/10/79 by American Drilling, Spokane.
- Idaho Division of Environmental Quality (IDEQ). 1991a. Avery Railroad Dump and Roundhouse PA Report.
- . 1991b. Avery Landing Site—Proposed Remediation. Letter from Brian Painter and Lisa Prochnow of IDEQ to Mike Fish of Potlatch, dated January 23, 1991.
- International Air Transport Association (IATA). 1987. Dangerous Goods Regulations. 29th Edition.

APPENDIX A
SITE PLAT MAP
(Circa 1915)

APPENDIX B
IDAHO WELL DRILLER'S REPORTS

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORTUSE TYPEWRITER OR
BALLPOINT PENState law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

1. WELL OWNER Name <u>Richard N. & Judy Parker</u> Address <u>Box 4 Avery, ID 83522</u> Owner's Permit No. _____		7. WATER LEVEL Static water level <u>16</u> feet below land surface. Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No G.P.M. flow _____ Artesian closed-in pressure _____ p.s.i. Controlled by: <input type="checkbox"/> Valve <input checked="" type="checkbox"/> Cap <input type="checkbox"/> Plug Temperature <u>62</u> °F. Quality <u>Good</u> <small>Describe character of temperature water source</small>																																	
2. NATURE OF WORK <input checked="" type="checkbox"/> New well <input type="checkbox"/> Deepened <input type="checkbox"/> Replacement <input type="checkbox"/> Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)		8. WELL TEST DATA <input type="checkbox"/> Pump <input type="checkbox"/> Bailor <input checked="" type="checkbox"/> Air <input type="checkbox"/> Other _____ <table border="1"><thead><tr><th>Discharge G.P.M.</th><th>Pumping Level</th><th>Hours Pumped</th></tr></thead><tbody><tr><td><u>15</u></td><td><u>Variable</u></td><td><u>2 hr</u></td></tr></tbody></table>		Discharge G.P.M.	Pumping Level	Hours Pumped	<u>15</u>	<u>Variable</u>	<u>2 hr</u>																										
Discharge G.P.M.	Pumping Level	Hours Pumped																																	
<u>15</u>	<u>Variable</u>	<u>2 hr</u>																																	
3. PROPOSED USE <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Irrigation <input type="checkbox"/> Test <input type="checkbox"/> Municipal <input type="checkbox"/> Industrial <input type="checkbox"/> Stock <input type="checkbox"/> Waste Disposal or Injection <input type="checkbox"/> Other _____ (specify type)		9. LITHOLOGIC LOG <table border="1"><thead><tr><th>Bore</th><th>Depth</th><th>Material</th><th>Water</th></tr><tr><th>Diam.</th><th>From</th><th>To</th><th>Yard No.</th></tr></thead><tbody><tr><td>A</td><td>0</td><td>16</td><td>Clay and Shale</td><td>X</td></tr><tr><td></td><td>16</td><td>24</td><td>Shale</td><td>X</td></tr><tr><td>B</td><td>24</td><td>175</td><td>Shale</td><td>X</td></tr></tbody></table>		Bore	Depth	Material	Water	Diam.	From	To	Yard No.	A	0	16	Clay and Shale	X		16	24	Shale	X	B	24	175	Shale	X									
Bore	Depth	Material	Water																																
Diam.	From	To	Yard No.																																
A	0	16	Clay and Shale	X																															
	16	24	Shale	X																															
B	24	175	Shale	X																															
4. METHOD DRILLED <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Air <input type="checkbox"/> Hydraulic <input type="checkbox"/> Reverse rotary <input type="checkbox"/> Cable <input type="checkbox"/> Dug <input type="checkbox"/> Other _____																																			
5. WELL CONSTRUCTION Casing schedule: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Concrete <input type="checkbox"/> Other _____ <table border="1"><thead><tr><th>Thickness</th><th>Diameter</th><th>From</th><th>To</th></tr></thead><tbody><tr><td><u>2.50</u> inches</td><td><u>6</u> inches</td><td><u>2</u> feet</td><td><u>24</u> feet</td></tr><tr><td>_____ inches</td><td>_____ inches</td><td>_____ feet</td><td>_____ feet</td></tr><tr><td>_____ inches</td><td>_____ inches</td><td>_____ feet</td><td>_____ feet</td></tr><tr><td>_____ inches</td><td>_____ inches</td><td>_____ feet</td><td>_____ feet</td></tr></tbody></table> Was casing drive shoe used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was a packer or seal used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Perforated? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No How perforated? <input type="checkbox"/> Factory <input type="checkbox"/> Knife <input checked="" type="checkbox"/> Torch Size of perforation _____ inches by _____ inches <table border="1"><thead><tr><th>Number</th><th>From</th><th>To</th></tr></thead><tbody><tr><td>_____ perforations</td><td>_____ feet</td><td>_____ feet</td></tr><tr><td>_____ perforations</td><td>_____ feet</td><td>_____ feet</td></tr><tr><td>_____ perforations</td><td>_____ feet</td><td>_____ feet</td></tr></tbody></table> Well screen installed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Manufacturer's name _____ Type _____ Model No. _____ Diameter _____ Slot size _____ Set from _____ feet to _____ feet Diameter _____ Slot size _____ Set from _____ feet to _____ feet Gravel packed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Size of gravel _____ Placed from _____ feet to _____ feet Surface seal depth <u>24</u> Material used in seal: <input type="checkbox"/> Cement grout <input checked="" type="checkbox"/> Bentonite <input type="checkbox"/> Pudding clay <input checked="" type="checkbox"/> Gravel Sealing procedure used: <input type="checkbox"/> Slurry pit <input type="checkbox"/> Temp. surface casing <input checked="" type="checkbox"/> Overbore to seal depth Method of joining casing: <input type="checkbox"/> Threaded <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Solvent Weld _____ <input type="checkbox"/> Cemented between strata Describe access port _____		Thickness	Diameter	From	To	<u>2.50</u> inches	<u>6</u> inches	<u>2</u> feet	<u>24</u> feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	Number	From	To	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet		
Thickness	Diameter	From	To																																
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_____ perforations	_____ feet	_____ feet																																	
6. LOCATION OF WELL Sketch map location must agree with written location. <table border="1"><tr><td>N</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td>W</td><td></td><td></td><td></td><td>E</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td>S</td><td></td><td></td><td></td><td></td></tr></table> Subdivision Name _____ Lot No. _____ Block No. _____ County <u>Salt Lake</u> <u>SW 1/4 Sec. 15 T. 45 S. R. 5 E. W.</u>		N										W				E											S					11. DRILLERS CERTIFICATION I/We certify that all minimum well construction standards were complied with at the time the rig was employed. <u>ASSOCIATED WELL</u> Firm Name <u>Drillers Inc</u> Firm No. <u>245</u> Address <u>Box 723 C.O.A. Dan</u> <u>6/19/85</u> Signed by (Firm Official) <u>Bob Thompson</u> and (Operator) <u>Robert J. Dwyer</u>			
N																																			
W				E																															
S																																			

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

USE TYPEWRITER OR
BALL POINT PEN

State of Idaho
Department of Water Administration
WELL DRILLER'S REPORT

Date of report must be within 30 days of completion of well. Report must be filed with the Department of Water Administration within 30 days of completion of well.

1. WELL OWNER G.N.R. INC. ANEXY TOWN BURNING TOWN, NORTHEAST INC. 650 CENTRAL BLVD. SEATTLE, WA 98144		2. WATER LEVEL Static water level 20 feet below ground surface Pumping rate 100 GPM flow Pumping head 600 feet Pumping time 100 hours Pumping cost \$100.00	
3. NATURE OF WORK <input checked="" type="checkbox"/> New well <input type="checkbox"/> Repair <input type="checkbox"/> Redrill <input type="checkbox"/> Other		4. WELL TEST DATA Flow rate 100 GPM Draw down 20 feet Hours pumped 100 hours	
5. PROPOSED USE <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Irrigation <input type="checkbox"/> Test <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> New line <input type="checkbox"/> Install <input type="checkbox"/> Shut <input type="checkbox"/> Arise (specify) _____		6. LITHOLOGIC LOG Depth 0 to 25 feet Material 100% sand and gravel Water Yes/No	
7. METHOD DRILLED Cable <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Dig <input type="checkbox"/> Other		8. WELL CONSTRUCTION Diameter of hole 6 inches Total depth 125 feet Casing schedule: <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Concrete Thickness 1/2 inch Diameter 6 inches From 0 feet To 125 feet Was a packer or seal used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Perforated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No How perforated? <input type="checkbox"/> Factory <input type="checkbox"/> Knife <input type="checkbox"/> Torch Size of perforation 1/4 inch by 1/4 inch Number 100 From 0 feet To 125 feet Well screen installed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Manufacturer's name _____ Type _____ Model No. _____ Diameter _____ Slot size _____ Set from _____ feet to _____ feet Gravel packed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Size of gravel _____ Placed from _____ feet to _____ feet Surface seal depth 20 feet Material used in seal <input type="checkbox"/> Cement grout <input checked="" type="checkbox"/> Pudding clay <input checked="" type="checkbox"/> Well cuttings Sealing procedure used <input type="checkbox"/> Shury pit <input type="checkbox"/> Temporary surface casing <input checked="" type="checkbox"/> Overbore to seal depth	
9. LOCATION OF WELL Sketch map location must agree with written location. Subdivision Name _____ Lot No. _____ Block No. _____ County SHOSHONE T. 45 N. R. 5 E. S. 17		10. DRILLER'S CERTIFICATION Work started 10/1/74 Finished 10/1/74 Firm Name _____ Address _____ Signed by (Firm Official) _____ Dorner _____	

USE ADDITIONAL SHEETS IF NECESSARY

FORWARD THE WHITE COPY TO THE DEPARTMENT

PAL 002094

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

USE TYPEWRITER OR
BALLPOINT PEN

State law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

<p>1. WELL OWNER</p> <p>Name: <u>Potlatch Corp. Northern Unit Logging</u></p> <p>Address: <u>Box 386 St. Maries, Idaho 83861</u></p> <p>Owner: Permit No. _____</p>	<p>7. WATER LEVEL</p> <p>Static water level: <u>20</u> feet below land surface.</p> <p>Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No G.P.M. flow _____</p> <p>Artesian (static) pressure _____ p.s.i.</p> <p>Controlled by: <input type="checkbox"/> Valve <input type="checkbox"/> Cap <input type="checkbox"/> Plug</p> <p>Temperature: <u>cold</u> Quality: <u>good</u></p>																																																																
<p>2. NATURE OF WORK</p> <p><input checked="" type="checkbox"/> New well <input type="checkbox"/> Deepened <input type="checkbox"/> Replacement</p> <p>Abandoned (describe method of abandoning) _____</p>	<p>8. WELL TEST DATA</p> <p><input type="checkbox"/> Pump <input type="checkbox"/> Bailor <input checked="" type="checkbox"/> Air <input type="checkbox"/> Other _____</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Discharge G.P.M.</th> <th>Pumping Level</th> <th>Hours Pumped</th> </tr> </thead> <tbody> <tr> <td><u>50 G.P.M.</u></td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>	Discharge G.P.M.	Pumping Level	Hours Pumped	<u>50 G.P.M.</u>	_____	_____																																																										
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<p>6. LOCATION OF WELL</p> <p>Sketch map location must agree with written location.</p> <p style="text-align: center;">N</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:25%; text-align: center;">W</td> <td style="width:50%; text-align: center;"> </td> <td style="width:25%; text-align: center;">E</td> </tr> <tr> <td colspan="3" style="text-align: center;">S</td> </tr> </table> <p>Subdivision Name _____</p> <p>Lot No. <u>1</u> Block No. _____</p> <p>County <u>Shoshone</u></p> <p>_____ % _____ Sec. <u>16</u> T. <u>45</u> N.R. <u>5</u> E.W.</p>	W		E	S			<p>11. DRILLERS CERTIFICATION</p> <p>I/We certify that all minimum well construction standards were complied with at the time the rig was removed.</p> <p>Firm Name <u>American Drilling</u> Firm No. <u>269</u></p> <p>Address <u>P.O. Box 14977 Spokane, Wash 99216</u></p> <p>Signed by (Firm Official) <u>James Murphy</u></p> <p>and (Operator) <u>B.D. Murphy</u></p>																																																										
W		E																																																															
S																																																																	

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

PAL 002095

300

300 yds down logging camp, well still in use well routinely tested.

APPENDIX C
CALCULATION FOR NET PRECIPITATION

URS CONSULTANTS, INC.

Calculation for Net Precipitation

Date: 01/06/93 Individual of Data Entry: Kara Steward
 Site: Avery Railroad Dump and Round Type of Temperature (C or F): F
 Latitude: 47 12' 13.65" N DATA Available Temperature or Evap. (D or E): D
 Longitude: 115 49' 15" W >Latitude (50,45,40,35,30,20,10,0): 45.00

Calculation performed according to HRS Final Rule
 (40 CFR Part 300), Section 3.1.2.2 using formulas:

Net Precipitation = Monthly Precipitation - Evapotranspiration (E)
 $E(\text{Jan..Dec}) = 0.6 * F(\text{Jan..Dec}) [10T(\text{Jan..Dec})/I]^a$
 Variables:

$E(\text{Jan..Dec})$ = Monthly potential evapotranspiration, if $E < 0$ then $E = 0$ is used

$F(\text{Jan..Dec})$ = Monthly latitude adjusting value

$T(\text{Jan..Dec})$ = Mean monthly Temperature (Centigrade)

$I = \text{Sum}[T(\text{Jan..Dec})/5] \sim 1.614$

$a = 6.75 * (10 \sim 7)^*(1 \sim 3) - 7.71 * (10 \sim 5)^*(1 \sim 2) + 1.79 * (10 \sim 2)^*1 + 0.49239$

(Fill in only the shaded spaces)

Monthly Variables: Enter what is available				Calculated Variables					Difference Variables	
Month	Degree (C or F)	Precipitation	Evaporation	Variable T	Variable I	Variable a	Variable F	Variable E	Precip-Evap.	Positive P-E
Jan	23.80	5.66	#	-4.56	-0.40		0.80	-0.71	5.66	5.66
Feb	30.50	3.49	#	-0.83	-0.07		0.81	-0.10	3.49	3.49
March	36.90	3.28	#	2.72	0.40		1.02	0.50	2.78	2.78
April	44.60	2.68	#	7.00	1.67		1.13	1.63	1.05	1.05
May	53.00	2.78	#	11.67	3.64		1.28	3.30	-0.52	0.00
June	60.70	2.22	#	15.94	5.86		1.29	4.74	-2.52	0.00
July	66.00	1.43	#	18.89	7.58		1.31	5.84	-4.41	0.00
Aug	65.90	1.48	#	18.83	7.55		1.21	5.37	-3.89	0.00
Sept	55.90	2.22	#	13.28	4.43		1.04	3.11	-0.89	0.00
Oct	45.10	2.26	#	7.28	1.77		0.94	1.42	0.84	0.84
Nov	34.00	4.20	#	1.11	0.10		0.79	0.14	4.06	4.06
Dec	27.30	4.96	#	-2.61	-0.23		0.75	-0.35	4.96	4.96
Average Annual Precipitation		36.66								
				Total I		Variable a				
				32.29		5780.25				
				TOTAL						
				22.83						

NET PRECIPITATION =

22.83 INCHES

AVERY R S

2

SHOSHONE County

Station 100528

CLIMATOLOGICAL SUMMARY
Calendar Year 1968 -1989

DATE		TEMPERATURES (F)										PRECIPITATION (IN)												
		MONTHLY MEANS			DAILY RECORDS				DEGREE DAYS		TOTALS			DAILY			SNOWFALL			SNOWDEPTH				
MONTH		MAX	MIN	MONTH	HI	YR	DAY	LOW	YR	DAY	HEAT	COOL	MEAN	MAX	YR	HI	YR	DAY	MEAN	MAX	YR	MAX	YR	DAY
Jan		30.6	19.1	23.8	48	84	27	-17	79	1	1220	0	5.66	10.15	71	1.66	71	30	38.9	74.5	69	44	69	31
Feb		36.3	24.7	30.5	54	84	28	-20	85	4	981	0	3.49	8.00	72	1.25	71	10	19.0	40.0	72	48	69	2
Mar		45.2	28.6	36.9	75	78	30	0	76	4	888	0	3.28	5.81	89	1.60	84	23	4.6	13.7	70	33	72	4
Apr		55.8	33.3	44.6	88	87	29	21	73	7	622	1	2.68	4.60	74	1.07	70	24	0.5	3.8	70	23	75	1
May		66.7	39.0	53.0	91	88	23	24	88	5	371	8	2.78	5.27	84	1.50	79	5	0.0	0.0	.	0	.	.
Jun		75.7	45.7	60.7	98	87	15	30	83	29	159	41	2.22	5.36	81	1.35	71	27	0.0	0.0	.	0	.	.
Jul		83.3	48.6	66.0	102	85	9	34	71	7	59	95	1.43	3.87	83	1.27	81	7	0.0	0.0	.	0	.	.
Aug		83.4	48.2	65.9	104	69	23	34	69	29	54	92	1.48	4.26	76	1.10	75	22	0.0	0.0	.	0	.	.
Sep		70.2	41.6	55.9	99	88	4	24	70	14	274	12	2.22	4.44	86	1.83	76	23	0.0	0.0	.	0	.	.
Oct		56.0	34.2	45.1	84	87	7	11	71	29	609	0	2.26	6.05	75	1.27	89	21	0.5	6.0	71	2	71	31
Nov		39.1	29.1	34.0	62	87	1	1	82	23	924	0	4.20	6.98	89	1.87	82	22	7.8	26.4	75	20	75	30
Dec		31.6	22.9	27.3	50	77	4	-23	68	30	1164	0	4.96	10.43	77	2.80	77	1	25.9	61.4	71	28	71	15
ANNUAL		56.2	34.6	45.3	104			-23			7327	248	36.65	10.43		2.80			97.1	74.5		48		

2 yr 24 hr precip 1.8"

APPENDIX D

SITE VISIT AND SAMPLING PHOTO DOCUMENTATION LOG

URS Consultants		ARCS Photograph Log		DCL # 62760.05.20.144/15.b1	
Project Number 4162760.05.07		Project/Site Name Avery RR Dump & Roundhouse		Photographer(s) Signatures(s) Kara Steward	
Camera Type Cannon AE		Film Type/Speed 200 ASA 35 mm		Roll Number One	Date August 25, 1992

Frame	Date	Time	Orientation	Subject	
1	8/25/92	1200	SW	Oily seep area, location of samples ORS01 & ORS02.	
2	8/25/92	1201	W	River and oil interface along site.	
3	8/25/92	1210	W	Mule deer on site.	
4	8/25/92	1210	NW	Mule deer on site; note Idaho road crew emissions.	
5	8/25/92	1215	E	Mule deer on site.	
6	8/25/92	1230	W	River bank view of upstream sediment sampling location. Looking toward site - (0.75 mile).	
7	8/25/92	1230	W	View from river of upstream sediment sampling location.	
8	8/26/92	0950	W	On-site monitoring well - MW-4 (Hart-Crowser Well).	
9	8/26/92	0955	W	Oily material unable to be penetrated by bailer - level of oil = 10' below ground surface.	
10	8/26/92	1010	S	MW-3 - removing grease pack from well to allow opening of well cap. - WMW01 sample. (Hart Crowser Well.)	
11	8/26/92	1145	N	View of layered soil on site - sample site of SS03.	
12	8/26/92	1155	SE	View of hole digging for sample SS04.	
Date Delivered to Processor 8/31/92		Date Received from Processor 9/2/92		Comments	



2	8/25/92	1201	W
---	---------	------	---

River and oil interface along site.

1	8/25/92	1200	SW
---	---------	------	----

Oily seep area, location of samples ORS01 & ORS02.

4	8/25/92	1210	NW
---	---------	------	----

Mule deer on site; note Idaho road crew emissions.

3	8/25/92	1210	W
---	---------	------	---

Mule deer on site.



10	8/26/92	1010	S
----	---------	------	---

MW-3 - removing grease pack from well to allow opening of well cap. - WMW01 sample. (Hart Crowser Well.)

12	8/26/92	1155	SE
----	---------	------	----

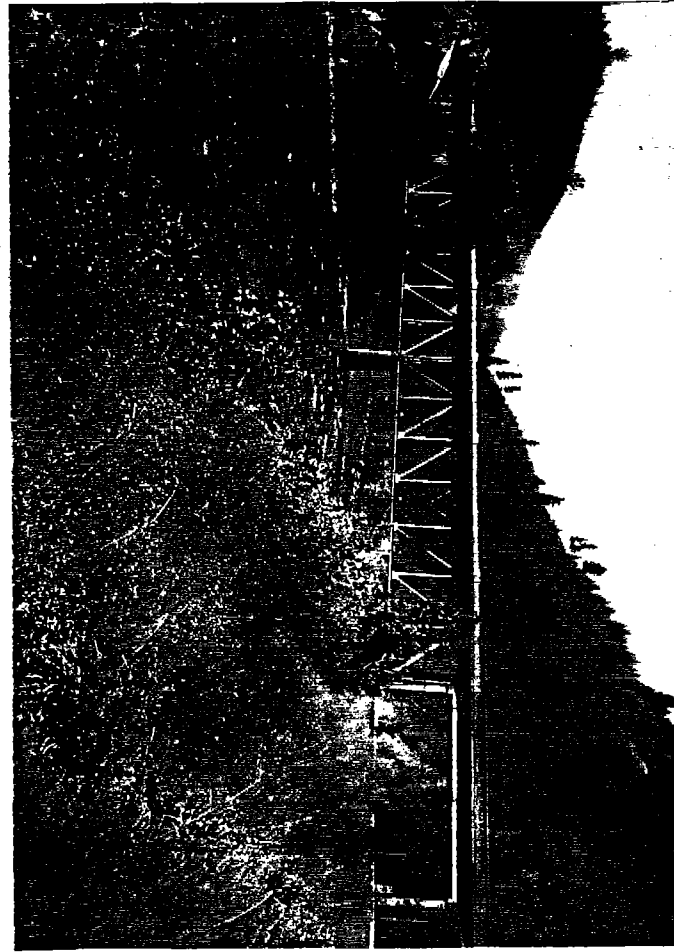
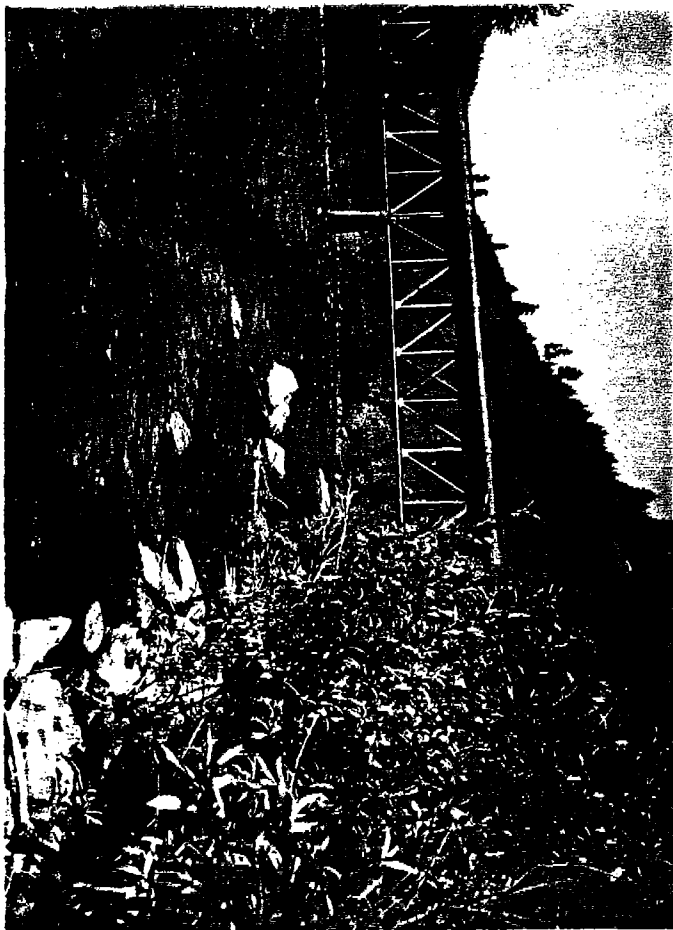
View of hole digging for sample SS04.

9	8/26/92	0955	W
---	---------	------	---

Oily material unable to be penetrated by bailer - level of oil = 10' below ground surface.

11	8/26/92	1145	N
----	---------	------	---

View of layered soil on site - sample site of SS03.



6	8/25/92	1230	W
---	---------	------	---

River bank view of upstream sediment sampling location. Looking toward site - (0.75 mile).

5	8/25/92	1215	E
---	---------	------	---

Mule deer on site.

8	8/26/92	0950	W
---	---------	------	---

On-site monitoring well - MW-4 (Hart-Crowse Well).

7	8/25/92	1230	W
---	---------	------	---

View from river of upstream sediment sampling location.

APPENDIX E

DISCUSSION OF DATA QUALITY OBJECTIVES

APPENDIX E DISCUSSION OF DATA QUALITY OBJECTIVES

Table E-1 summarizes data quality objectives and actual measures of these parameters for this SI.

**Table E-1
Summary of Target and Actual Data Quality Objectives**

Compound or Analyte of Interest	Accuracy		Precision		Completeness	
	Target %	Actual %	Target %	Actual %	Target %	Actual %
Volatile Organic Analysis	61-145	22-280	15	> 30	100	92.3
Semivolatile Organic Analysis	9-145	41-122	50	> 30	100	87.1
Pesticides/PCBs	38-127	20-146	30	15	100	92.3
Total Metals	75-127	5.3-119	20	20 (Pb = 140)	100	92.3
Mercury	75-127	53-112	20	20	100	92.3

ACCURACY

Volatile Organic Analysis

The matrix spike (MS) and matrix spike duplicate (MSD) recoveries for the water samples were within the target range except the recovery of one or both spike samples for trans-1,3-dichloropropene and cis-1,3-dichloropropene fell outside the EPA Region 10 acceptance range. The qualifier J was assigned to these analytes for sample WHC01. Recoveries ranged from 41 to 122 percent.

The MS and MSD recoveries for the soil samples were within the target range except the recovery of one or both spike samples and/or the percent difference for vinyl chloride, carbon disulfide, chloroethane, bromoform, bromomethane, chloromethane, 2-butanone, bromochloromethane, 4-methyl-2-pentanone, 2-hexanone, 1,2,3-trichloropropane, 1,2-dibromo-3-chloropropane, trichlorofluoromethane, and 1,2,3-trichlorobenzene fell outside the target range. The qualifier J was assigned to these analytes for sample SS05-2. All other recoveries or percent difference were acceptable. No additional data qualifiers

were required based on matrix spike recoveries. Recoveries for the MS/MSD ranged from 22 to 280 percent.

Semivolatile Organic Analysis

Recoveries for most of the water sample MS/MSD analytes were within the target range. One or both spike recoveries for four analytes—hexachloroethane, hexachlorocyclopentadiene, benzoic acid, and 3-nitroaniline—were outside the target range. All values for these analytes were given the qualifier J or UJ for the corresponding sample WSW02. No additional data qualifiers were required on the basis of MS/MSD results. Recoveries ranged from less than 50 percent to 122 percent.

Pesticides/PCBs

Target accuracy was met for the water samples. Target accuracy was not met for the soil samples. The samples ORS01 and SS004 analyzed for MS/MSD and the samples SS03-2 and SS03-1 contained high background, which required sulfuric acid treatment. This resulted in a low recovery for Endosulfan I and methoxychlor, as well as the total removal of Endrin and Dieldrin. These four pesticides are flagged with a J for those samples requiring acid treatment. The recoveries for the remainder of the pesticides were within the acceptable range. Recoveries for the MS/MSD ranged from 20 to 146 percent.

Total Metals

Target accuracy was met for the water samples. Target accuracy was not met for the soil samples. The recovery of at least one spike sample was low for antimony, lead, selenium, silver, and thallium. Both antimony and thallium exhibited low recoveries in all matrix spike samples, ORS01, SS003, SS02-1; thus, all antimony and thallium results were flagged with an N. Although lead exhibited poor matrix spike performance in sample SS02-1 (−240.6 percent to 80.6 percent), it was not flagged because the poor performance was a result of poor homogeneity. Selenium recoveries were low in matrix spike sample SS02-1 (70 percent) and therefore the results in the associated samples—SS02-1, SS02-2, SS04-1, SS04-2, SS06-1, and SS07-1—were qualified with an N. Silver recoveries were low in the matrix spike sample SS002 (67.4 percent, 70.1 percent) and therefore the results in the associated samples were qualified with an N. These samples include SS001, SS002, SS003, SS004, SS01-1, SS01-2, SS03-1, SS03-2, SS05-1,

SS05-2, SS06-2, and SS07-2. Recoveries for MS/MSD soil samples ranged from 5.5 to 119.3 percent.

Mercury

Matrix spike recoveries for the water samples were acceptable with the exception of one sample, WHC01. Mercury was flagged with an N because of slightly low recovery. Recoveries for MS/MSD water samples ranged from 71 to 112 percent.

All mercury results for the soil samples were flagged with an N based on the low recoveries (53 percent, 62 percent) from sample SS03-2.

PRECISION

Volatile Organic Analysis

Target precision was met for the water analysis. Target precision for soils exceeded 30 percent for several analytes.

Semivolatile Organic Analysis

Target precision for the water analysis exceeded 30 percent for eight compounds. All values for these specific analytes were given the qualifier J. The validation report does not provide adequate information to assess if the 50 percent precision target was met.

The continuing calibration response factor for 3-nitroaniline was low, resulting in this analyte being qualified as rejected.

Precision for soil samples was problematic. Results for two analytes, 3-nitroaniline and benzyl alcohol, were rejected. Several other analytes were J qualified.

Because of poor surrogate recoveries, the acid fractions of samples SS001, SS002, SS02-2, SS03-1, and SS07-1 were rejected.

Pesticides/PCBs

Target precision was met for both the water and soil analysis.

Total Metals

Target precision was met for the water analysis. Precision was problematic for the soil analysis due to the oily nature of the matrix. The samples underwent drying, particle reduction, and sieving in order to produce the best homogeneous mix possible. In the case of most analytes, these extra procedures helped to produce results with good precision. Lead was the only analyte that demonstrated consistently poor precision (RPD was 140 percent). The data were not qualified.

Mercury

Target precision was met for both water and soil analysis.

COMPLETENESS

Target completeness for this sampling effort was estimated to be 100 percent. The actual completeness for VOAs, pesticide/PCBs, total metals, and mercury is 92.3 percent. This is an acceptable level of completeness. Completeness was calculated to be 92.3 percent based on not collecting a second on-site groundwater sample and not using a second trip blank, as planned. Completeness for semivolatiles was further reduced, due to rejected laboratory analyses (see discussion for Precision), to 87.1 percent.

APPENDIX F
SAMPLE RESULTS
(August 25 and 26, 1992)

APPENDIX F

The following table presents the sample numbers in the following data reports that correspond to the sample identification numbers in the text of this report (refer to Table 4-1 for the description of the site sample location).

SI Report Sample Number	EPA Laboratory Number
WBW01 (VOCs only)	92352350
WAW01	92352351
WSW01	92352352
WSW02	92352353
WHCO1	92352354
ORS01	92352358
ORS02	92352359
SS001	92352360
SS002	92352361
SS003	92352362
SS004	92352363
SS01-1	92352364
SS01-2	92352365
SS02-1	92352366
SS02-2	92352367
SS03-1	92352368
SS03-2	92352369
SS04-1	92352370
SS04-2	92352371
SS05-1	92352372
SS05-2	92352373
SS06-1	92352374
SS06-2	92352375
SS07-1	92352376
SS07-2	92352377